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COMMUNITY WATER SUPPLY STUDY. ANALYSIS OF NATIONAL SURVEY FINDINGS

Bureau of Water Hygiene,
Cincinnati, Ohio

July 1970

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COMMUNITY WATER SUPPLY STUDY

Analysis of National Survey Findings

U.S. DEPARTMENT OF HEALTH, EDUCATION, AND WELFARE
Public Health Service
Environmental Health Service
Bureau of Water Hygiene

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ANALYSIS OF NATIONAL SURVEY FINDINGS

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Bureau of Water Hygiene
Environmental Health Service
U.S. Public Health Service
Department of Health, Education and Welfare

July 1970

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SUMMARY OF FINDINGS AND CONCLUSIONS

To investigate public water supply systems in the United States, the Bureau of Water Hygiene, Environmental Health Service, of the Public Health Service, with the cooperation of state and local health departments, and water utilities, conducted a nationwide Community Water Supply Study (CWSS) during 1969 in eight geographically distributed Standard Metropolitan Statistical Areas and the State of Vermont. The study included 969 water supply systems serving about 18.2 million people (see page 6 for population distribution by size) and was designed to assess: A) the status of drinking water quality, B) water supply system facilities, and C) bacteriological surveillance programs in urban and suburban areas in nine regions of the country.

The following are the principal findings of the study:

A. DRINKING WATER QUALITY

1. To determine the quality of the drinking water in the 969 communities studied, samples were taken at various places in the distribution systems. The data were averaged for each system and constituent concentrations compared to bacteriological, chemical, and physical constituent limits of the 1962 U.S. Public Health Service Drinking Water Standards (DWS). On this basis:

a) Only 59 percent of the systems delivered drinking water that met the Drinking Water Standards.

b) Additionally, 25 percent of the systems delivered drinking water that exceeded at least one of the DWS "recommended limits" (defined on page 13) but did not exceed any of the DWS "mandatory limits" (defined on page 14).

c) Finally, 16 percent of the systems delivered drinking water that exceeded one or more of the DWS mandatory limits.

2. The smaller systems had more difficulty in delivering water with satisfactory quality than the larger systems. As shown in the summary table below, this was particularly true of the many systems serving less than 500 people.

SUMMARY OF WATER QUALITY EVALUATION

	Population Group Served			
	Less Than 500	500-100,000	Greater Than 100,000	All Populations
Number of Systems:	446	501	22	969
	Percent of Systems			
Evaluation of Systems:				
Met Drinking Water Standards	50	67	73	59
Exceeded recommended limits	26	23	27	25
Exceeded mandatory limits	24	11	0	16
Note: Study Population in each Group in Thousands	88	4,652	13,463	18,203

3. While 572 systems (59 percent of the study total) delivered water with a quality on the average that met the DWS, people do not drink the average water, they drink from a specific tap in their home where the water quality is sometimes adversely affected by household plumbing. To determine the quality of water used, 2,595 individual samples were taken throughout the study areas at a consumer's tap, which were essentially glasses of drinking water; 930 (36 percent) of these contained one or more constituents with a concentration that exceeded the DWS limits. Each tap sample in the study had a population equivalent equal to the community population divided by the number of distribution samples taken from that community. On this basis, 2.9 million people, 16 percent of the study

population, were being served water from a tap containing substances that exceeded at least one DWS limit. Five percent of the study population were served water from a tap containing substances that exceeded at least one mandatory DWS limit.

4. Eighty-three (69 percent) of the 120 water supply systems that exceeded the coliform organism density limit, which indicated disease potential, were from poorly protected and/or inadequately treated spring and well sources. Additionally, 108 of these 120 systems (90 percent) that exceeded the coliform density limit served a population of 5,000 or less. The study included 761 of these size systems serving a total of 693,000 people, 3.8 percent of the study population. Finally, 79 of these 120 systems (66 percent) exceeding the coliform density limit were located in the State of Vermont where disinfection was not frequently practiced or was inadequate.

5. Of the 496 water supply systems using well sources, 43 percent exceeded the DWS limits. This was caused by the relatively high occurrence of iron, manganese, fluoride, total dissolved solids, and nitrates. Most of the high nitrates originated in ground water systems in California. The supplies that exceeded the optimum fluoride range were mainly small, but they are scattered throughout several regions.

6. Certain constituent limits were exceeded more often than others, but based on an average of all samples from each system, the principal ones were:

From Recommended List	No. of Systems on average Exceeding Limit	From Mandatory List	No. of Systems on Average Exceeding Limit
Iron	96	Coliform Organisms	120
Total Dissolved Solids	95	Fluoride	24
Manganese	90	Lead	14
Fluoride	52		
Sulfate	25		
Nitrate	19		

From a total of 969 systems

7. One of the most common consumer complaints reported by the operators was from tastes and odors. Because no practicay way exists to conduct odor tests on shipped samples, there was no effective method to quantify such information during this survey. Therefore, techniques should be developed for identifying and measuring organics and other substances that cause tastes and odors. This would also permit the improvement of treatment processes to remove these materials.

8. Techniques for collecting and measuring low concentrations of specific toxic organics, as well as those that cause tastes and odors, are inadequate, but the semi-quantitative carbon chloroform extract (CCE) method does allow for the general characterization of some organics in water so it was used on 94 surface supplies. Eleven percent of these supplies exceeded the recommended limit of 200 µg/l.

B. WATER SUPPLY SYSTEM FACILITIES

1. To determine the status of the facilities used to treat, distribute, and store public drinking water, site surveys and interviews with operators were conducted regarding the water supply system. Based on this information, 44 percent did not have any "major deficiencies" (see page 15), while 56 percent were deficient in one or more of the following: source protection, disinfection and/or control of disinfection, clarification (removal of suspended matter) and/or control of clarification, and pressure in the distribution system.

2. The data in the summary table below indicates that small systems have more facility deficiencies than the larger ones, but all sizes of systems have some improvements to make.

	Population Group Served			
	Less Than 500	500-100,000	Greater Than 100,000	All Populations
Number of Systems:	446	501	22	969
	Percent of Systems			
No major deficiencies	39	47	64	44
Some major deficiencies	61	53	36	56

3. Of the 80 spring and 37 combination spring-well sources where no disinfection was practiced 40 percent were poorly protected. This problem occurred mainly in towns under a population of 500 and particularly in the State of Vermont. This is one of the 5 study areas that reported some waterborne disease outbreaks in recent years.

4. Disinfection was found inadequate in 17 percent of the towns with populations under 25,000 people. Overall, 155 systems (16 percent of the study total) failed to disinfect properly. Where a chlorine residual was maintained in the distribution system, virtually no coliform indicator organisms were found.

5. Three out of the 22 systems serving over 100,000 population did not have adequate clarification.

6. Inadequate pressure (<20 psi) in the distribution system was found in 32 percent of the 446 systems serving under 500 people. Relatively limited areas of low pressure were also reported in 32 percent of the 38 cities over 50,000 population.

7. Of the 969 water supply systems, only 104 had an optimum range of fluoride concentration from either natural or man-fed sources. Three systems of the 52 that exceeded the optimum range of fluoride attempted to defluoridate, and only one of those was successful.

C. BACTERIOLOGICAL SURVEILLANCE PROGRAMS

1. To determine the status of the bacteriological surveillance program over each water supply system investigated, records in the state and county health departments were examined for the number of bacteriological samples taken and their results during the previous 12 months of record. Based on this information, only 10 percent had bacteriological surveillance programs that met the "criteria" (see page 15), while 90 percent either did not collect sufficient samples, or collected samples that showed poor bacterial quality, or both.

2. The data on the adequacy of the Health Department bacteriological surveillance programs related to system size are summarized below and indicate that in all population groups there was a gross failure to meet the sampling criteria. This was particularly true for smaller systems.

	Population Group Served			
	Less Than 500	500-100,000	Greater than 100,000	All Populations
Number of Systems:	446	501	22	969
	Percent of Systems			
Met criteria	4	15	36	10
Did not meet criteria	96	85	64	90

3. Insufficient samples were taken in more than one of the previous 12 months of record from 827 systems (85 percent of the study total).

4. Even considering a sampling rate reduced by 50 percent of that called for in the criteria, 670 systems (69 percent of the study total) still would not have collected sufficient samples.

5. Analysis of the bacteriological data records for those systems that did some sampling during the previous year of record, revealed that 48 percent exceeded the coliform density limit* at least one of the previous 12 months of record.

D. OTHER MAJOR FINDINGS AND CONCLUSIONS

1. To determine the status of the programs to control health hazards, data were collected on the date of the previous sanitary survey and the status of the cross-connection control program. This information indicated:

a. The personnel operating the systems reported a sanitary survey was made within the last three years in only 36 percent of the communities, while the personnel at 56 percent of the systems said either they did not know when the last sanitary survey was made or that one was never made by state or local health departments.

b. Cross-connection prevention ordinances, and re-inspection of existing construction were lacking in 54 and 89 percent respectively of the water supply systems studied.

*As defined in Drinking Water Standards, p. 5 and 6.

2. To determine the adequacy of personnel and their training, each operator was asked a series of questions about the staff. This type of inquiry produced the following main points:

a. Sixty-one percent of the operators had not received any water treatment training at a short-school level or higher.

b. Seventy-seven percent of the operators were deficient in training for microbiological work and 46 percent of those who needed chemistry training did not have any.

c. Many of the operators are only part-time employees and their salaries are very low. Only 29 percent of the full-time operators earn more than $7,500 per year, so lack of compensation has much to do with poor employee retention and questionable operation.

3. Size of community or system influences the quality of water delivered. Survey data also indicates that the smaller systems have greater problems with quality control, retention of qualified operators, maintenance of facilities and participation in bacteriological surveillance programs. Thus it may be very difficult to operate a small water system properly with the complex problems that now exist.

RECOMMENDATIONS

The results of the Community Water Supply Study lead to eleven specific recommendations:

1. The presence of coliform organisms at a level above the DWS limit in 120 systems indicates that better source protection and/or disinfection should be instituted as soon as possible. State or local regulatory agencies should establish a policy of mandatory disinfection unless they can provide technical assistance to assure adequate protection of ground water sources. Further laboratory and field testing should be conducted to determine the source of the contamination and the degree of chlorination or other disinfection necessary to control microbial forms throughout the distribution system without creating chlorinous tastes. More research should be done on determining the influence of residual organics on the development of tastes and organism regrowth in the distribution system.

2. The water utility should be responsible for water quality control, but the bacteriological surveillance collection requirements seem to be beyond the capability of most small water systems. A more practical technique must be developed if the public's health is to be protected. If all systems were chlorinated, a residual chlorine determination might be a more practical way of characterizing safety. Chlorine residual should be performed in the field whenever a bacteriological sample is collected, because it gives an immediate indication of safety. Eventually, an inexpensive continuous monitor should be developed and installed at the end of the system to reflect safeness at those weak points.

3. Because a consumer may reject a safe water if its appearance or taste is unsatisfactory, the many utilities with such constituents as iron, manganese, hydrogen sulfide, color, turbidity, algae and macroscopic organisms in their water should make every effort to use available treatment technology to reduce them. This could include such practices as mixing of raw water reservoirs, aeration, and/or coagulation and filtration. Further research is necessary to understand what causes these problems as well as how to more effectively remove objectionable constituents.

4. Inasmuch as tastes and odors remain a common complaint in public water supplies, more effort should be made to employ the present technology of oxidation and adsorption to control or remove these troublesome constituents. Further research is needed to reduce the cost of such treatment to make it more practical and acceptable. Better analytical procedures are needed to tailor the treatment to solve a specific problem. These analytical methods for organics would be valuable to toxicologists in determining the health effects of specific compounds as well as the general organics found in the water.

5. The frequency of high fluoride and nitrate concentrations indicates available technology for removal is not being employed, thus additional engineering research should be conducted to simplify and lower the cost of reducing the concentrations of these and other inorganics, especially from small systems. Simpler and cheaper continuous feeders and monitors should also be developed for fluorides. Where mandatory constituent limits are exceeded, present technology must be applied, because in no case is the cost completely prohibitive.

6. This study demonstrated a deterioration in quality after water left the treatment plant. The reason why trace metals and corrosion products continue to be present in tap water, in spite of efforts to prevent this corrosion, should be investigated. A continuous monitor for these constituents needs to be developed to determine more specifically where the problem originates. When the cause and effect relationship has been established, then corrective action can be taken.

7. Some of the drinking water standards were established with meager data on health effects. The CWSS results afford for the first time extensive data on drinking water quality at the consumer's tap and these data should be used for correlation studies with available health indices to see if the standards are adequate. Epidemiological field studies should be conducted in problem areas uncovered by the CWSS. Chemical data from the study should be used to estimate the portion of total body burden that is contributed by drinking water. High nitrates occurred in several supplies and examinations of exposed populations should be undertaken. The study, of course, only covered items in the Drinking Water Standards and data are not available on other contaminants of drinking water such as mercury, molybdenum and lithium.

8. Hazardous low-pressure (<20 psi) areas were found in many water systems primarily because of deficient pumping, storage, and distribution facilities. Pressure should therefore be monitored at strategic locations in the system and the system improved by installing adequate pumps, reservoirs, and generally strengthening the distribution network to handle peak fire or hot-weather demands. Such a program, along with the installation of backflow prevention devices at the service connection, should minimize the dangers from unfound cross-connections.

9. Because the one-time survey provided by the CWSS has resulted in improvements in some water supply systems ranging from the removal of a few feet of lead service pipe to establishment of a state water supply program, expanded state and local surveillance programs would continue to upgrade water supply systems. On a national basis, an estimated 14-million dollar increase in State programs is needed to conduct the recommended water system inspection, sampling, bacteriological and chemical analyses, and to provide technical assistance to the individual utility operator. Additional money would be needed to conduct formal training of operators.

10. Almost two-thirds of the operators have had no special water technology training. Further, a substantial need exists for additional staff to provide expanded programs for quality control. Therefore, the existing training programs of the utility, state, and federal groups should be enlarged considerably to provide better skilled operators particularly for the smaller systems.

11. The frequent occurrence of water quality problems and facility deficiencies in small systems, makes consolidation or regionalization of services of some systems advisable. In the metropolitan areas studied many smaller systems are mixed in with the larger systems and their merger would seem feasible where institutional arrangements will permit. Long-range regional planning should help overcome some of the current barriers to consolidation and may even prevent the continuation of small system proliferation. Merging would reduce the cost and improve the quality of the water delivered. As an initial effort, surveillance services and technical assistance could be provided by one group for several separate systems. Preliminary to complete consolidation, an attempt, at least, should be made to provide high quality treated water to scattered, but nearby towns.

INTRODUCTION

The purpose of the Community Water Supply Study (CWSS) was to determine if the American consumer's drinking water met the Drinking Water Standards.* To obtain nationwide coverage, the Bureau of Water Hygiene of the U. S. Public Health Service initiated the CWSS in February of 1969 in nine areas across the country. The field work for the CWSS was conducted by the Bureau of Water Hygiene, in cooperation with the state and local health departments of the water utilities.

This study was designed to give an assessment of drinking water quality, water supply systems, and surveillance programs in urban and suburban areas in each of the nine regions of the Department of Health, Education, and Welfare. These areas were selected to give examples of the several types of water supplies in the country. A whole Standard Metropolitan Statistical Area (SMSA) was the basis of each study, except in Region I where the entire State of Vermont was included, with evaluations made on all public water supply systems, as defined herein, in each study area. This coverage allowed an assessment of the drinking water quality of the large central city, the suburbs, and the smaller communities located in the counties in the SMSA, and the interaction between them.

Specifically, the objectives of this study were accomplished by determining whether or not:

1. The quality of the urban and suburban American consumer's drinking water in the selected study areas exceeded the Constituent Limits of the Drinking Water Standards (DWS);*

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*1962 U. S. Public Health Service Drinking Water Standards; PHS Publ. No. 956, Superintendent of Documents, Government Printing Office, Washington, D.C. 20402, 61 pp.

2. The water supply systems supplying this water to the consumers had facility deficiencies that might indicate or lead to potentially unsafe drinking water;

3. The bacteriological surveillance programs over these water supply systems meet the established criteria (See page 15).

The authority for the Community Water Supply Study is found in Title III, Part A, Section 301, Public Health Service Act, amended (42 U. S. C. 241).

> "Sec. 301 - The Surgeon General shall conduct in the Service, and encourage, cooperate with, and render assistance to other appropriate public authorities, scientific institutions, and scientists in the conduct of, and promote the coordination of, research, investigations, experiments, demonstrations, and studies relating to the causes, diagnosis, treatment, control, and prevention of physical and mental diseases and impairments of man, including water purification..."

SCOPE

Public water supplies in the United States numbered 19,236 serving some 150,000,000 people when last inventoried in 1963.* The remaining 50,000,000 people had private water supplies. Most of the public water supplies were small, about 85 percent serving 5,000 or less people. About one-half of the public was served by the 18,837 supplies that each served 100,000 or less persons and the other one-half (77,000,000) were served by the 399 larger supplies. About 75 percent of these public water supplies have ground water as a source, while 18 percent use surface water. The remaining 7 percent have a mixture of ground and surface water source.

Systems Studied

This study covered 969 public water supply systems, including 885 community water supply systems (91.3% of the total) and 84 special water supply systems (8.7% of the total). For this study the following definitions of the systems were used.

> PUBLIC WATER SUPPLY SYSTEM - A water supply system includes the works and auxiliaries for collection, treatment, storage, and distribution of water from the sources of supply to the free-flowing outlet of the ultimate consumer. Water supply systems were included in this study, if they had 15 or more service connections and/or served 25 or more consumers.
>
> Special Water Supply Systems - are those systems serving trailer and mobile home parks, other tourist accommodations and institutions with resident populations.
>
> Community Water Supply Systems - are all other systems studied in an SMSA.

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* Statistical Summary of Municipal Water Facilities in the United States, January 1, 1963; PHS Publ. No. 1039, Government Printing Office, Washington, D. C. 1965, 66 pp.

The 969 public water supply systems studied (5 percent of the national total) served about 18,200,000 persons (12 percent of the total population served by public water supplies) and consisted of 613 ground water systems, 120 surface water systems, 46 systems with mixed sources, 106 systems buying finished water from another system, hereafter called wholesale finished water source systems, and 84 special water supply systems.

For the purpose of the report, water supply systems were divided into four types: 1) those using surface water or a mixture of surface and ground water as a source; 2) those using ground water as a source (this type was further divided into: a) wells, b) springs, and c) mixture of both; 3) those purchasing wholesale finished water as a source; and 4) special water supply systems. Table 1 shows the number of systems in each category and the population served in each region and in the entire study.

The number of public water supply systems in various population ranges is given in Table 2. The 22 major cities included 73 percent of the study population while only 0.5 percent are served by the 446 systems serving less than 500 consumers. The water treatment practices found in the study are presented in Tables 3 and 4.

Study Areas

Background for selection of each of the nine study areas and the definition of Standard Metropolitan Statistical Area (SMSA) are given below.

> STANDARD METROPOLITAN STATISTICAL AREA -- The boundaries and titles of standard metropolitan statistical areas are established by the Bureau of the Budget with the advice of the Federal Committee on Standard Metropolitan Statistical Areas. An SMSA is a county or group of contiguous counties which contains at least one city of 50,000 inhabitants or more or "twin cities" with a combined population of at least 50,000. In addition to the county, or counties, containing such a city or cities, contiguous counties are included in an SMSA if, according to certain criteria, they are essentially metropolitan in character and are socially and economically integrated with the central city.

TABLE 1

SUMMARY OF WATER SUPPLY SYSTEM TYPES BY REGION

Region	Pop. in Thousands	Number of Systems by Type						Total
		Surface and Mixed Source	Ground Source			Wholesale Finished Source	Special	
			Wells	Springs	Mixture of Both			
I	307.2	73	40	67	23	1	14	218
II	12,356.3	14	135	0	1	30	41	221
III	229.3	14	12	1	0	3	0	30
IV	251.1	1	16	0	0	3	2	22
V	1,366.0	8	31	0	0	19	8	66
VI	1,383.5	23	24	0	0	34	7	88
VII	1,085.4	7	14	0	0	2	3	26
VIII	111.5	4	11	1	1	0	3	20
IX	1,113.4	22	213	11	12	14	6	278
	18,203.8	166	496	80	37	106	84	969
Study population served in Thousands:		12,777	4,060	149	29	1,093	94	18,204

TABLE 2

SIZE DISTRIBUTION OF SYSTEMS STUDIED

Population Range	Number of Systems	Percent of Total	Total Population Served in Thousands	Percent of Total
<500	446	46	87.6	< 1
500-1,000	101	10	73.0	< 1
1,000-5,000	214	22	532.3	3
5,000-10,000	75	8	539.6	3
10,000-25,000	59	6	1,018.6	6
25,000-50,000	36	4	1,380.2	8
50,000-100,000	16	2	1,110.0	6
100,000-1,000,000	21	2	5,362.5	29
>1,000,000	1	<1	8,100.0	44
Total	969		18,203.8	

TABLE 3

WATER TREATMENT PRACTICES IN THE SYSTEMS STUDIED

Treatment Practice	Type of System (Number of Systems of each)						Overall System Totals	
	Surface Water & Mixed Source	Ground Water Source			Wholesale Finished Water Source	Special Systems	Number	Percent
		Springs	Wells	Mixture of Both				
Do not disinfect, clarify, or buy, chlorinated water	13	65	330	25	10	53	496	51
Disinfection only or buy chlorinated water	64	15	108	12	93	19	311	32
Clarification* and disinfection	88	0	52	0	3	12	155	16
Clarification* without disinfection	1	0	6	0	0	0	7	1
System Totals - Number	166	80	496	37	106	84	969	100

*Clarification is the removal of suspended material by coagulation, sedimentation and/or filtration.

TABLE 4

WATER TREATMENT PRACTICES IN THE SYSTEMS STUDIED

Treatment Practice	Population Served in Thousands (Number of Systems of Each)							Overall System Totals	
	<.5	.5-5	5-10	10-25	25-50	50-100	> 100	Number	Percent
Do not disinfect, clarify, or buy chlorinated water	318	131	17	20	8	2	0	496	51
Disinfection only or buy chlorinated water	98	117	38	24	19	6	9	311	32
Clarification* and disinfection	29	63	19	15	8	8	13	155	16
Clarification* without disinfection	1	4	1	0	1	0	0	7	1
System Totals - Number	446	315	75	59	36	16	22	969	100

*Clarification is the removal of suspended material by coagulation, sedimentation and/or filtration.

Region I - State of Vermont

Vermont was included in the study at the request of the Commissioner of Health with the concurrence of the Governor. (Replaced the initially selected SMSA in this Region).

Region II - New York, New York

This SMSA included Rockland, Westchester, Nassau, and Suffolk Counties in addition to the city of New York. It was selected to represent those water supplies utilizing surface water providing disinfection only for treatment and those utilizing ground waters from high population denstiy areas. It also represents the highly urbanized (megapolis) areas of the United States.

Region III - Charleston, West Virginia

This SMSA included Kanawha County. It was selected to represent those supplies using surface waters that receive the wastes from a highly industrializedarea. The small coal mine town supplies represent supplies in economically depressed areas of the northern Applachian area.

Region IV - Charleston, South Carolina

This SMSA included Berkeley and Charleston Counties. It was selected to represent the Atlantic and Gulf coast areas using both surface and ground water.

Region V - Cincinnati, Ohio - Kentucky - Indiana

This SMSA included Hamilton, Warren and Clermont Counties, Ohio; Boone, Campbell, and Kenton Counties, Kentucky; and Dearborn County, Indiana. It was selected to represent those portions of mid-America using surface water receiving a considerable amount of industrial discharge in addition to municipal wastes and agricultural runoff.

Region VI - Kansas City, Missouri - Kansas

This SMSA included Cass, Clay, Jackson, and Platte Counties, Missouri and Johnson and Wyandotte Counties, Kansas. It is similar to the Cincinnati SMSA, but was selected to represent surface waters with a larger agricultural runoff to industrial waste ratio.

Region VII - New Orleans, Louisiana

This SMSA included Jefferson, Orleans, St. Bernard, and St. Tammany Parishes, Louisiana. It was selected to represent the supplies receiving surface water drained from large and varied river basins, plus some from deep artesian wells.

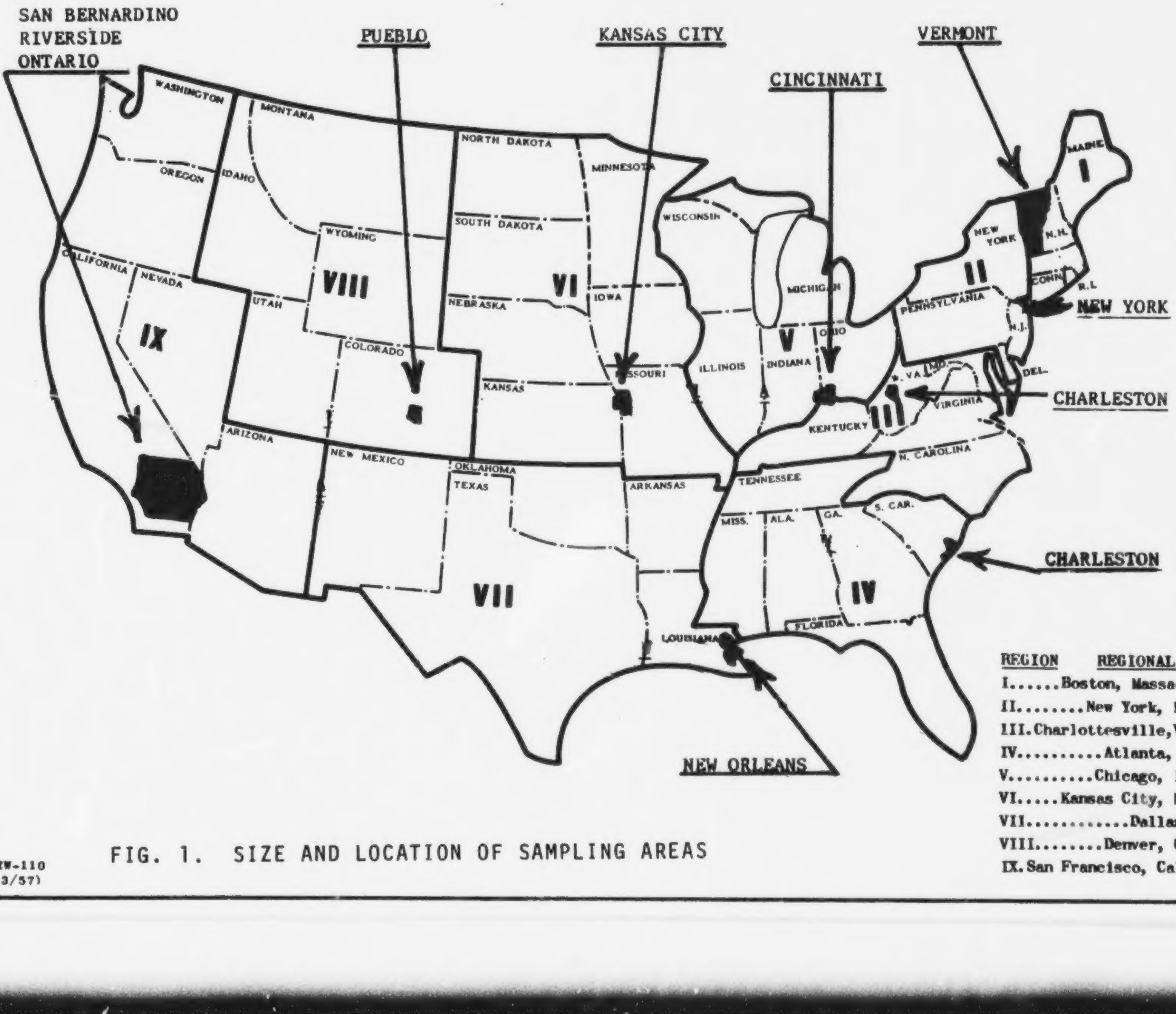
Region VIII - Pueblo, Colorado

This SMSA included Pueblo County, Colorado. It was selected to represent the water supplies of the high plains region of the country that has a mixture of ground water and surface water sources.

Region IX - San Bernardino - Riverside - Ontario, California

This SMSA included San Bernardino and Riverside Counties, California. It was selected to represent the semi-arid regions of the west and southwest as well as an area served primarily by ground water.

Figure 1 shows the location and the relative size of each study area.


SAN BERNARDINO
RIVERSIDE
ONTARIO
PUEBLO
KANSAS CITY
CINCINNATI
VERMONT
NEW YORK
CHARLESTON
CHARLESTON
NEW ORLEANS
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MONTANA
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COLORADO
ARIZONA
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NORTH DAKOTA
SOUTH DAKOTA
NEBRASKA
KANSAS
OKLAHOMA
TEXAS
MINNESOTA
IOWA
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FLORIDA
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MAINE
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II
III
IV
V
VI
VII
VIII
IX

REGION	REGIONAL OFFICE
I	Boston, Massachusetts
II	New York, New York
III	Charlottesville, Virginia
IV	Atlanta, Georgia
V	Chicago, Illinois
VI	Kansas City, Missouri
VII	Dallas, Texas
VIII	Denver, Colorado
IX	San Francisco, California

FIG. 1. SIZE AND LOCATION OF SAMPLING AREAS

Form HEW-110
(Rev. 3/57)

EVALUATION CRITERIA

Each water supply system was investigated on three bases: 1) drinking water quality was determined by sampling the finished and distributed water and returning these samples to the laboratories of the Bureau of Water Hygiene for bacteriological, chemical, and trace metal analyses; 2) the status of the water supply system facilities was determined by a field survey of the system and the gathering of data on three standard forms (four items were chosen to represent major problems; a) source(s), b) treatment, if any, c) distribution system pressures, and d) operation); 3) the status for the surveillance program over the water supply system was evaluated by obtaining bacteriological water quality data for the previous 12 months of record from state and county health department files.

Water Quality Criteria

Water quality was judged either:

(1) Not to exceed the Constituent Limits of the DWS, hereafter called met Drinking Water Standards, or,

(2) To exceed at least one "recommended" Constituent Limit (some are aesthetic parameters), but does not exceed any "mandatory" Constituent Limit (hereafter called Exceeded recommended, but not mandatory limits) or,

(3) To exceed at least one "mandatory" Constituent Limit (hereafter called Exceeded "mandatory" limits).

The Drinking Water Standards Constituent Limits measured in this study are summarized in Table 5 below.

TABLE 5

Partial List of Bacteriological, Chemical, and Physical Constituent Concentration Limits Taken from the 1962 U.S. Public Health Service Drinking Water Standards

RECOMMENDED LIMITS

(If the concentration of any of these constituents are exceeded, a more suitable supply or treatment should be sought)

Constituent	Limit
Alkyl Benzene Sulfonate (Measured as methylene-blue-active substances)	0.5 mg/l
Arsenic	0.01 mg/l*
Boron	1.0 mg/l**
Chloride	250 mg/l
Color	15 Units
Copper	1.0 mg/l
Carbon-Chloroform Extract (CCE)	0.200 mg/l
Cyanide	0.01 mg/l
Fluoride	
Temp. (Ann.Avg.Max.Day, 5 years or more)	
50.0-53.7	1.7 mg/l
53.8-58.3	1.5 mg/l
58.4-63.8	1.3 mg/l
63.9-70.6	1.2 mg/l
70.7-79.2	1.0 mg/l
79.3-90.5	0.8 mg/l
Iron	0.3 mg/l
Manganese	0.05 mg/l
Nitrate	45 mg/l
Radium-226	3 μμc/l (pCi/l)***
Strontium-90	10 μμc/l (pCi/l)***
Sulfate	250 mg/l
Total Dissolved Solids (TDS)	500 mg/l
Turbidity	
Untreated	5 Units
Treated by more than disinfection	1 Unit
Zinc	5 mg/l

TABLE 5 (Contd.)

MANDATORY LIMITS

(If the concentration of any of these constituents are exceeded, the further use of this water for drinking and culinary purposes should be evaluated by the appropriate health authority because water of this quality represents a hazard to the health of consumers.)

Constituent	Limit
Arsenic	0.05 mg/l
Barium	1.0 mg/l
Boron	5.0 mg/l**
Cadmium	0.01 mg/l
Chromium (hexavalent)	0.05 mg/l
Coliform organisms (Measured by membrane filter technique)	Fails std. if: a) Arithmetic average of samples collected greater than 1 per 100 ml b) Two or more samples (5% or more if more than 20 examined) contain densities more than 4/100 ml
Cyanide	0.2 mg/l
Fluoride	
Temp. (Ann.Avg.Max.Day - 5 years or more)	
50.0-53.7	2.4 mg/l
53.8-58.3	2.2 mg/l
58.4-63.8	2.0 mg/l
63.9-70.6	1.8 mg/l
70.7-79.2	1.6 mg/l
79.3-90.5	1.4 mg/l
Gross Beta activity (in the absence of α or Sr-90)	1,000 μμc/l(pCi/l)***
Lead	0.05 mg/l
Selenium	0.01 mg/l
Silver	0.05 mg/l

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*Although the recommended arsenic concentration is 0.01 mg/l, because of interferences in some waters, the concentration of arsenic was only determined to be less than 0.03 mg/l. For the purposes of this study, these waters were considered not to exceed the recommended standard.

**Proposed for inclusion in the Drinking Water Standards.

***If these limits are exceeded, refer to Section 6.2 of the DWS.

Facilities Criteria

Source, treatment, operation, and distribution facilities were judged* either:

1) To be essentially free from major deficiencies, or
2) To be deficient in one or more of the following (where applicable):
    a) Source protection (in absence of disinfection or buying chlorinated water)
    b) Disinfection (if disinfection practiced)
    c) Control of disinfection (if practiced or if purchasing chlorinated water)
    d) Clarification capabilities (if clarification practiced)
    e) Control of clarification (if clarification practiced)
    f) Pressure (<20 psi) in some or all areas of the distribution system

Bacteriological Surveillance Program Criteria

The bacteriological surveillance program over the water supply system was judged either:

1) To meet the following criteria, or,
2) Not to meet one or both of the following:
    a) Collection of the required number** of bacteriological samples for no less than 11 months during the previous 12 months of record.
    b) Passing the bacteriological quality standard** for no less than 11 months during the previous 12 months of record.

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*See "Manual for Evaluating Public Drinking Water Supplies, PHS Publication No. 1820, 1969" for basis of judgment.

**See pages 3-6 of the Drinking Water Standards.

METHODS

Field Survey

The regional office staff, in cooperation with the state and local health department officials, prepared a listing of all known water supplies meeting the definition adopted for this study. The list contained the supply name, address, name of the superintendent or person in charge, indication of size, and the telephone number. The list was cross-checked with community and subdivision names to eliminate duplication and establish those areas for which the water supply facilities were apparently unknown. A Form PHS 682, Report of Water Supply Used on Interstate Carriers, was prepared for each supply from state and local health department records. The completed list became the basis for work schedules for the field engineers.

Actual field surveys were made by one of the 20 PHS engineers from headquarters and the regional offices that made up the field staff. At the option of state and local health department staff members, they made surveys with the PHS engineer. The staff of the field office made appointments by telephone, for the surveys, one to seven days in advance, except for the Kansas and Missouri State Health Departments who made the appointments several weeks in advance of the study.

During the field survey, the engineer completed Forms ECA-18, Inventory of Municipal Water Facilities, and ECA-19, Municipal Water Supply Sanitary Survey, to provide information on source, treatment; operation; laboratory control; personnel; distribution; surveillance practices; planning for improvements; and water rates. Examples of the standard forms are in the Appendix.

Sampling Program

The following samples were collected and dispatched to various Bureau of Water Hygiene Laboratories:

1) Raw water

One sample for bacteriological analysis.

2) Finished water ready for distribution

Four or 5 samples for chemical analyses as follows:

a) 2 1/2-gallon sample to the Northeast Water Hygiene Laboratory. This was a grab sample for most ground water and small surface water treatment plants, but where possible a 14-day composite was taken. The following analyses were made on this sample:

Arsenic
Boron
Chloride
Color
Cyanide
MBAS
Nitrate
Selenium
Sulfate
TDS
Turbidity

b) 8-oz. aliquot sample for trace metals analysis was taken out of sample 2)a) above and sent to the Cincinnati Laboratory. The following analyses were made on this sample:

Barium
Cadmium
Chromium
Cobalt
Copper
Fluoride
Iron
Lead
Manganese
Nickel
Silver
Specific Conductance
Zinc

c) 1-gallon sample for radioactivity analyses was sent to one of the three Bureau of Radiological Health Laboratories. It was collected in the same manner as sample 2)a) above. The following analyses were made on this sample:

Specific gamma emitting radionuclides
(^{131}I, ^{137}Cs, ^{140}Ba)
Gross Alpha
Gross Beta
Radium-226, if gross alpha exceeded 3 pCi/l
Strontium-90, if gross beta exceeded 10 pCi/l
Tritium - (run on 10% of samples)

d) 1-gallon sample for pesticide analysis to the Gulf Coast Water Hygiene Laboratory from surface water supplies plus those ground water supplies where sampling was specifically requested by the state or county health officials. It was collected in the same manner as sample 2)a) above. The following analyses were made on this sample:

Aldrin
Chlordane
DDT
Dieldrin
Endrin
Heptachlor
Heptachlor Epoxide
Lindane
Methoxychlor
Toxaphene

e) 1 activated carbon monitor sample to the Cincinnati Laboratory from 110 selected water supplies, 94 of which were from surface sources. Carbon Chloroform Extract (CCE) and Carbon Alcohol Extract (CAE) concentrations were determined from this monitor.

3) Distribution System

Samples for bacteriological and trace metal analyses at the rate of 10 percent of the number required by Figure 1, of the DWS, with a minimum of 2 each from any water supply.

These samples were taken from consumer's faucets where water was likely to be withdrawn for drinking or culinary purposes. A bacteriological sample was taken only after flushing for several seconds and the chemical sample was then taken shortly thereafter. No special treatment was given to the faucet because each sample was meant to reflect the actual quality of the water delivered to the consumer.

All samples were collected in 8-oz. sterile, plastic, wide-mouth, screw-capped bottles which contained 0.2 ml of a 10% solution of sodium thiosulfate as a dechlorinating agent. This concentration of thiosulfate was sufficient to neutralize a sample containing about 15 mg/l residual chlorine, an amount above any residual that was present. Refrigeration of all samples was required during transportation back to the laboratory. Maximum time between collection and analysis did not exceed 30 hours.

Laboratory Procedures

Bacteriological

The bacteriological procedures were those of Standard Methods.* The membrane filter (MF) procedure was used for total coliform detection in this study for three reasons. One, larger volumes (100-ml portions) of distributed water could be examined than with the MPN technique; two, the MF procedure yields more precise results; and three, less processing time would be involved per sample, so reexamination of many of the samples could have been made within the 30-hour time limit if required. All potable and source water samples were examined for total coliforms using M-Endo MF broth, incubated at 35°C for 20-24 hours. Because raw water quality varied with its source, three decimal sample portions were filtered, the volume being determined by the estimated water quality.

Any coliform colonies detected in the examination of a sample were further verified by transfer to phenol red lactose for 24- and 48-hour periods at 35°C incubation. All positive phenol red lactose broth tubes then were confirmed in brilliant green lactose at 35°C for verification of total coliforms and in EC medium at 44.5°C for detection of fecal coliforms. This procedure further confirmed the standard total coliform MF test and supplied additional information on the potentially hazardous occurrence of fecal coliform in those potable water supplies.

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*Standard Methods for the Examination of Water and Wastewater, 12th Ed., APHA, AWWA, and WPCF. American Public Health Assoc. New York, N.Y., 1965. 796 pp.

Basic knowledge was also needed on the general bacterial population of potable water. Therefore, the general population of bacterial count (plate count) was also made on all distribution system samples. Sample portions of 1 ml and 0.1 ml in plate count agar (Tryptone-Glucose-Yeast Agar), incubated 48 hours at 35°C were sufficient to yield the desired data.

Chemical

The five samples, as noted above, taken to determine the chemical quality of the finished and/or distributed water were analyzed as follows:

Sample 2)a), General Chemistry.

These constituents were generally determined by *Standard Methods*, except as listed below.

Barium

No standard method existed at the time this study was undertaken. An atomic absorption procedure, which will appear in the next edition of *Standard Methods*, was used and was found acceptable. The analysis was made only on those samples that had less than 2 mg/l sulfate because above that concentration the barium precipitates out of solution.

Chloride

A variation of the potentiometric titration procedure was used, which is a tentative method in *Standard Methods*, page 372. Rather than titrate with silver nitrate to a specified end-point in millivolts, using a glass electrode and a silver-silver chloride electrode, a standard curve was prepared that related millivolts to chloride concentration. The concentration of an unknown is then determined from the standard curve. The procedure was just as accurate as the titration method and was simpler to carry out.

Fluoride

A fluoride electrode method, which will appear in the next edition of Standard Methods, was used. Precision and accuracy was generally better than any other method and the method was simpler to carry out.

Sample 2)b), Trace Metals.

The atomic absorption spectrophotometer method was used for all heavy metals (cadmium, chromium, copper, iron, lead, manganese, silver, zinc, nickel, and cobalt) because its sensitivity, specificity, simplicity and speed of analysis far exceeded the usual wet chemical methods. An atomic absorption method for these metals will appear in the next edition of Standard Methods.

Sample 2)c), Radioactivity.

These radiological constituents were determined using standard radiological counting techniques.

Sample 2)d), Pesticides.

No standard procedure for pesticide determinations existed at the time the CWSS was undertaken. Gas chromatography is generally the accepted method of analysis and will appear in the next edition of Standard Methods. Therefore, this technique was used.

Sample 2)e), Organics (CCE and CAE).

These organic constituents were determined using standard extraction techniques.

RESULTS

This section contains the principal data on the three major objectives of this study; that is, a determination of: 1) the drinking water quality in the study areas, 2) the status of the water supply systems providing this drinking water, and 3) the status of the bacteriological surveillance programs over these water supply systems. In general, the data will be discussed on a National basis, except for certain problems that are obviously regional in nature. Details of the findings for each DHEW Region are contained in the nine separate Regional Reports.

Study Sample

In an attempt to study a variety of water supply problems, and a variety of types of water supply systems of various sizes, the decision was made, in the design of this study, to investigate all of the public water supplies in nine geographically distributed study areas. While this technique was not expected to provide a perfect random sample of water supply systems throughout the country, the results are considered to be reasonably representative of the status of the water supply industry in the United States.

This is verified by using the data in Public Health Service Publication No. 1039, "Statistical Summary of Municipal Water Facilities in the United States, January 1, 1963," and comparing certain statistical breakdowns to those of the CWSS. Nationally, about 77 percent of the public water supplies had ground water as a source in 1963, while about 64 percent of the supplies in the CWSS had this category of source. The 1963 Facilities Inventory also showed that in the United States, 3.6 percent of the water supplies served larger municipalities, greater than 50,000 population, while 3.9 percent of the water supplies in the CWSS served communities with populations greater than 50,000. The CWSS sample included about 5 percent of the water supplies in the United States as listed in the 1963 Municipal Water Facilities Inventory.

Water Quality - Influence of Source and Community Size

Tables 6 and 7 show that overall, 59 percent of the water supply systems studied met the Drinking Water Standards. Included in the 41 percent that exceeded the Constituent Limits were 16 percent that exceeded mandatory limits, while the remainder exceeded recommended, but not mandatory limits.

Table 6 demonstrates that the spring and spring and well sources, a majority of which were unprotected and/or inadequately treated, produced the poorest water quality, mainly because of high coliform densities in the distributed water. Protected wells, on the other hand, produced relatively uncontaminated water. The high percentage that did not exceed the mandatory limits was the result of low coliform densities in ground water. Because of the higher content of inorganics in ground water, well sources did, however, have the highest percentage of systems exceeding recommended, but not mandatory limits. Surface waters, although often drawn from polluted sources are usually improved by treatment. Because of this treatment the overall quality of surface and mixed sources was equal to that of well source systems.

Systems buying water from another system showed the highest percentage of water quality that met the Drinking Water Standards. This is probably because these systems buy water from larger supplies which are generally the better systems. The Special Systems were, in general producing water quality slightly above the average for the entire study. This may be related to their general use of acceptable ground water sources.

TABLE 6

WATER QUALITY EVALUATION BY SOURCE

	Type of System (All data are percent of System Totals)						Overall System Totals	
	Surface Water & Mixed Source	Ground Water			Wholesale Finished Water Source	Special Systems	Number	Percent
		Springs	Wells	Mixture of Both				
Met Drinking Water Standards	57	45	57	54	76	65	572	59
Exceeded Constituent Limits*	43	55	43	46	24	35	397	41
Exceeded recommended but not mandatory limits	25	14	29	11	19	23	238	25
Exceeded mandatory limits	18	41	14	35	5	12	159	16
System Totals - Number	166	80	496	37	106	84	969	-

*See pages 12-14 for definition of Constituent Limits.

TABLE 7

WATER QUALITY EVALUATION BY COMMUNITY SIZE

	Population Served in Thousands (All data are percent of Size Totals)							Overall System Totals	
	<.5	.5-5	5-10	10-25	25-50	50-100	>100	Number	Percent
Met Drinking Water Standards	50	67	64	71	67	62	73	572	59
Exceeded Constituent Limits*	50	33	36	29	33	38	27	397	41
Exceeded recommended but not mandatory limits	26	21	25	20	30	31	27	238	25
Exceeded mandatory limits	24	12	11	9	3	7	0	159	16
System Totals - Number	446	315	75	59	36	16	22	969	-

Note: Percent of 18.2 million study population in the four above groups was:

Met Drinking Water Standards	86	
Exceeded Constituent Limits	14	
Exceeded Recommended Limits		12
Exceeded Mandatory Limits		2

*See pages 12-14 for definition of Constituent Limits.

Table 7 shows that, in general, the larger communities produce much better quality water than the smaller ones. While the percentage exceeding recommended, but not mandatory limits does not vary much with size, the percent of systems that exceed mandatory limits declines dramatically as the communities become larger. The reason 86 percent of the study population was served drinking water that met the Drinking Water Standards when only 59 percent of the systems were evaluated thusly, is, as shown in Table 7, bigger systems, where most of the study population reside, distribute better quality water. In spite of many of the small communities using well sources, one-half of these systems exceeded the Constituent Limits. These systems are served mainly by springs, or surface water.

Facilities Evaluation - Influence of Source and Community Size

Tables 8 and 9 show that overall 44 percent of the water supply systems investigated in the CWSS were essentially free from major deficiencies. Tables 3 and 4 on pages 8 and 9 of this report present details regarding the water supply system facilities found during the study. In summary, 496 systems did not practice disinfection, clarification or buy chlorinated water, 311 systems practiced disinfection only or bought chlorinated water, 155 systems practiced clarification and disinfection, and 7 systems practiced clarification without disinfection.

Source Protection

Table 8 shows that 41 percent of the untreated spring, and spring and well sources also were poorly protected. This poor protection, combined with the lack of treatment, explains the poor water quality that these sources deliver, as shown by Table 6.

TABLE 8

FACILITIES EVALUATION BY SOURCE

	Type of System (All data are percent of System Totals by Type)						Overall System Totals	
	Surface Water & Mixed Source	Ground Water			Wholesale Finished Water Source	Special Systems	Number	Percent
		Springs	Wells	Mixture of Both				
Essentially free of major deficiencies	15	28	51	30	60	58	422	44
Major Deficiencies	85	72	49	70	40	42	547	56
Inadequate source protection, in the absence of disinfection or buying chlorinated water	8	41	18	38	22	13	184	19
Inadequate disinfection , if practiced	35	11	14	17	4	13	155	16
Inadequate control of disinfection, if practiced or if buying chlorinated water	11	4	6	5	5	10	65	7
Inadequate clarification, if practiced	16	N.A.	3	N.A.	0	2	43	4
Inadequate control of clarification, if practiced	33	N.A.	<1	N.A.	0	5	60	6
Low (<20 psi) pressure in some or all areas of the dist. system	36	51	22	32	15	15	249	26
System Totals - Number	166	80	496	37	106	84	969	

N.A. Means not applicable

Table 9 shows that the bulk of the unprotected sources are serving communities of less than 500 population. Very few communities with a population greater than 10,000 were drawing water from a poorly protected source. Of course, many of these larger communities overcome the poor quality of their raw water through either disinfection, or clarification and disinfection.

Disinfection

Table 8 indicates that the major problem with disinfection is with surface,and mixed surface and ground water sources. These systems not only had the highest percentage of systems with inadequate disinfection, if practiced, but also had one of the highest percentages showing inadequate control of disinfection. This probably explains why only 57 percent of this type of system provided water quality that met the Drinking Water Standards (Table 6) even though most of these sources are treated. The reason that communities having a population from 5,000 to 10,000 have the poorest record with respect to disinfection or disinfection control, see Table 9 may be because these towns are large enough to obtain water from surface sources where treatment is required, but are not large enough to attract high quality operators or to finance high quality treatment plants.

Clarification

As in the case of disinfection, Table 8 shows that the poorest record of clarification and control of clarification was found in surface,and mixed surface and ground water sources. This is particularly serious, because these sources are precisely the ones that need adequate clarification if disinfection is to be effective. Three of the 22 larger communities (14 percent) had inadequate clarification and 2 (10 percent) had inadequate clarification control, see Table 9. Because this size community often draws water from

TABLE 9

FACILITIES EVALUATION BY COMMUNITY SIZE

	Population Served in Thousands (All data are percent of System Totals by Type)							Overall System Totals	
	<.5	.5-5	5-10	10-25	25-50	50-100	>100	Number	Percent
Essentially free of major deficiencies	39	44	49	49	64	50	64	422	44
Major Deficiencies	61	56	51	51	36	50	36	547	56
Inadequate source protection, in the absence of disinfection or buying chlorinated water	27	17	7	5	6	0	0	184	19
Inadequate disinfection, if practiced	12	20	28	24	6	13	9	155	16
Inadequate control of disinfection, if practiced or if buying chlorinated water	8	7	8	5	3	0	0	65	7
Inadequate clarification, if practiced	1	7	8	8	3	12	14	43	4
Inadequate control of clarification, if practiced	3	11	4	5	3	6	10	60	6
Low (<20 psi) pressure in some or all areas of the dist. system	32	17	24	22	25	31	32	249	26
System Totals - Number	446	315	75	59	36	16	22	969	..

Note: 31 percent of the study population was served drinking water from systems that were essentially free of major deficiencies.

low quality sources such as major rivers, improvement in clarification is necessary to provide these large populations with high quality water.

Distribution System Pressure

Table 8 shows that along with their other difficulties, the systems using spring sources had the poorest record of maintaining greater than 20 psi pressure throughout their distribution system. Table 9 indicates that, with respect to community size, the greatest difficulty in maintaining adequate distribution pressures is in the smallest and the largest communities. About one-third of the communities less than 500 and greater than 50,000 population had low pressure in certain areas or throughout their distribution system. The larger communities are faced with problems of an ever-growing complexity of the distribution system, hilly terrain, and tall buildings. Under these circumstances, maintenance of adequate distribution pressure, vital though it may be to prevent backflow, is very difficult.

Bacteriological Surveillance Program Evaluation - Influence of Source and Community Size

Tables 10 and 11 indicate that overall only 10 percent of the systems studied met the bacteriological surveillance criteria. Again, the spring and spring and well sources had the poorest record. Even the best record, 21 percent for supplies with surface and mixed surface and ground water sources, was poor. Table 11 indicates that with the exception of the 25,000 to 50,000 size community, whose data are unexplainable at this time, the towns less than 500 population had the poorest records. Even the largest communities, however, were doing poorly, with only 36 percent of the 22 communities greater than 100,000 meeting the criteria.

As noted on page 15, the bacteriological surveillance criteria have two parts, a collection portion and a quality

TABLE 10

BACTERIOLOGICAL SURVEILLANCE EVALUATION BY SOURCE

	Type of System (All data are percent of System Totals						Overall System Totals	
	Surface Water & Mixed Source	Ground Water			Wholesale Finished Water Source	Special Systems	Number	Percent
		Springs	Wells	Mixture of Both				
Met bacteriological surveillance criteria*	21	2	9	2	8	7	100	10
Did not meet bacteriological surveillance criteria*	79	98	91	98	92	93	869	90
Did not collect samples at at rate in the bacteriological surveillance criteria*	68	98	85	95	92	94	827	85
System Totals - Number	166	80	496	37	106	84	969	-

*See page 15 for definition of bacteriological surveillance criteria.

TABLE 11

BACTERIOLOGICAL SURVEILLANCE EVALUATION BY COMMUNITY SIZE

	Population Served in Thousands (All data are percent of System Totals)							Overall System Total	
	<.5	.5-5	5-10	10-25	25-50	50-100	>100	Number	Percent
Met bacteriological surveillance criteria*	4	18	12	10	3	12	36	100	10
Did not meet bacteriological surveillance criteria*	96	82	88	90	97	88	64	869	90
Did not collect samples at the rate in the bacteriological surveillance criteria*	94	74	83	85	92	88	64	827	85
System Totals - Number	446	315	75	59	36	16	22	969	-

Note: 60 percent of the study population were served drinking water by systems over which the bacteriological surveillance program met the criteria.

*See page 15 for definition of bacteriological surveillance criteria.

portion. To evaluate each supply, the number of samples collected was compared to the collection criteria, and the coliform density from the samples collected, if any, were compared to the quality portion of the criteria. Every supply could be evaluated on the collection portion, but only those supplies that collected some samples could be evaluated on the quality portion of the criteria. If a supply did not collect any samples, it obviously could not have any samples with coliform densities reported. Therefore, the collection portion of the criteria can be analyzed separately, but the quality portion cannot.

The purpose of evaluating the sample collection portion of the criteria separately is to show the numbers of supplies that are not meeting this portion of the criteria. However, mere collection of samples is no guarantee that a supply would pass the criteria. This is because many supplies that now collect too few samples, might find that when sufficient samples are collected they would exceed the quality portion of the criteria.

Tables 10 and 11 do show, however, that overall, 85 percent of the water supply systems investigated did not collect samples at the rate in the bacteriological surveillance criteria. This means that many supplies, if they are producing good quality water, could meet the criteria merely by collecting and analyzing sufficient samples.

For comparison purposes, data were gathered to determine how many of the water supply systems studied did not collect sufficient bacteriological samples at a rate equal to 50 percent of that called for in the DWS. This analysis shows that 827 systems, (85 percent of the total) did not take sufficient samples, while 670 (69 percent of the total) did not take samples at even half the rate given in the DWS. This reveals that assuming a sampling rate of only 50 percent of that in the DWS is satisfactory, an additional 157 supplies (16 percent of the study total) would have collected sufficient samples. This demonstrates that in most systems the sampling rate is not just below that called for in the DWS, it is not even close to 50 percent of that rate.

Selecting for analysis the supplies that collected at least one-half enough samples for six months of the previous year of record, 48 percent would not have met the quality portion of the bacteriological surveillance criteria. This percentage failing to meet this criteria ranged from 57 percent for the smaller systems (<500) to 4 percent for the systems serving more than 50,000 persons.

DISCUSSION OF RESULTS

The Discussion of Results section contains information interpreted for the country as a whole from data collected during the CWSS on four items of special importance to the water supply industry. These are: 1) quality of source water, 2) quality of distributed water, 3) control of health hazards, and 4) influence of water supply system size on operation and performance.

Quality of Source Water

Surface Water

Changes in the quality of a raw water source can result in changes in the quality of treated water furnished to the consumer. Continual deterioration of source quality may force the water utility to use more extensive treatment methods or seek alternate sources to maintain finished water quality. These actions usually result in an increase in the cost of water.

In many areas, pollution abatement has not kept pace with the increasing effects of man-made pollution, particularly in our surface waters. As a result, the quality of many water supplies' raw water sources has been threatened. In an effort to evaluate the magnitude of this threat, a portion of the CWSS was designed to obtain information on the past and present source quality for each water supply system studied.

Specifically, information was sought during the sanitary survey on the present adequacy of the source with respect to quantity, bacteriological, chemical, and physical quality, and source protection. In addition, an attempt was made to determine if the overall quality of the source had improved, deteriorated, or stayed the same during the past three years. In general, the answers to the latter question were subjective opinions of the water supply system operators.

This is a summary of the source quality information obtained from those water systems that have surface raw water sources. For purposes of tabulation, a water supply was considered to have a surface source when:

1. Its only source of raw water was from a river, stream, brook, lake, reservoir, pond, and so forth; or

2. In the case of a combined (surface plus ground) source, more than 50 percent of the annual raw water volume came from the surface source. Supplies for which the relative percentage of surface and ground raw water volumes could not be determined from the CWSS Inventory Form (ECA-18) were not included.

Table 12 summarizes the information on source quantity and quality obtained during the sanitary survey. These data show that, in general, the quantity and quality of surface water source was judged adequate by the engineers that surveyed these systems. Only slightly over one-half of the sources, however, were judged to be adequately protected. The sources were used because safe water was provided by adequate treatment. Conclusions on a national basis are heavily influenced by the State of Vermont where many of the unprotected sources did not receive adequate treatment.

Based on the operator's opinion, 59 percent reported that the quality of their source had remained the same over the past 3 years.

TABLE 12

SUMMARY OF RESPONSES ON ADEQUACY OF SURFACE WATER SOURCES

Item	Systems Responding	Percent Adequate	Percent Inadequate
Quantity	124	87	13
Bacteriological Quality	112	80	20
Chemical Quality	113	83	17
Physical Quality	114	83	17
Source Protection	117	55	45

Item	Systems Responding	Percent Improved	Percent Deteriorated	Percent Same
Changes in Source Quality During Last 3 Years	123	15	26	59

Note: 124 water supply systems were classified as surface water source for this analysis.

Additional information on this subject was obtained from the National Water Quality Network, initiated by the Division of Water Supply and Pollution Control of the U. S. Public Health Service, in 1957. This network was operated by the PHS until 1966, when the responsibility was transferred to the Pollution Surveillance Branch of the Federal Water Pollution Control Administration (now the Federal Water Quality Administration).

Of the 50 original sampling locations established for the network, three are at the raw water intakes for surface water supplies included in this CWSS. These locations are:

1. Ohio River at Cincinnati, Ohio
   (Cincinnati water treatment plant)
2. Missouri River at Kansas City, Kansas
   (Kansas City water treatment plant)
3. Mississippi River at New Orleans, Louisiana
   (Carrollton water treatment plant)

To obtain additional information about these sources, seven water quality parameters, indicative of the quality of the river for use as a water supply source, were selected. They are:

1. One hour chlorine demand
2. Total hardness
3. Turbidity
4. Total alkalinity
5. Total algal count
6. Total coliform count
7. Total carbon chloroform extractables (CCE)

A review of the data for Cincinnati, Ohio shows that since 1964 there has been:

1. little change in chlorine demand (data limited)
2. a slight cyclic variation in total hardness
3. a decreasing trend in turbidities
4. a gradual increase in total alkalinity
5. a marked reduction in algal counts

6. a decreasing trend (until 1968) in coliform counts
7. very little change in CCE

In general, these data support the opinions obtained during the CWSS that the quality of the Ohio River as a water supply source had either improved or stayed the same in recent years.

The data for recent years from the Missouri River at Kansas City show the following:

1. little or no change in chlorine demand, total hardness, total alkalinity, or CCE
2. a marked reduction (approximately 7-fold) in turbidity
3. a sharp increase in algal counts up to 1966 (data limited)
4. a decreasing trend in total coliforms

The turbidity data, in general, agree with the reductions reported during the CWSS. The coliform data shows a decreasing trend, however, in opposition to the increase in microbiological loading reported in the study.

The Mississippi River is the only surface source in the New Orleans SMSA. Most of the water supplies using the river for raw water reported continued deterioration of source quality during the past 3 years. The presence of wastes from a vast complex of upstream sources renders the river difficult to treat for water supply purposes. Tastes and odors are a continual treatment problem in this area.

For this sampling station, the following changes in the selected water quality parameters were noted:

1. marked increases in both algal counts and total coliforms
2. after an unexplained initial decrease over a period of 2 years, there was a gradual increase in 1-hour chlorine demand
3. a gradual increase in total hardness
4. little change in total alkalinity and CCE
5. generally declining trend in turbidity

The data for algal counts, total coliforms, chlorine demand, and total hardness support, in varying degrees, the reported conditions of continued source deterioration. The deterioration reported in the CWSS at this location may be better shown by observations other than those selected, such as the aggravation of tastes and odors after chlorination. and recognition of spills by continuous monitoring.

Ground Water

Well water is often thought to be of high bacteriological quality. In the CWSS, for example, 67 percent of the well waters were distributed to the consumers without being disinfected. To determine whether or not this confidence in well water is justified, the bacteriological data from the raw well water samples in the CWSS were analyzed. These data are presented in Table 13.

The three characteristics of bacteriological quality of well water that stand out in this study are:

1. Nine percent of the wells produced water containing coliform bacteria.
2. Two percent of the wells produced water containing fecal coliform.
3. Eighty-three percent of the wells produced water containing bacteria as measured by plate count.

Most of the wells having total coliform or fecal coliform densities greater than 4/100 ml were constructed, or so located as to make contamination of the water a not-too-unexpected result. Examples of these included: "horizontal wells" that are driven or drilled into the side of a hill and are difficult to protect; and wells in consolidated formations in poorly drained, inhabited areas.

While bacteria enumerated by plate count does not usually have a direct health significance, heavy growths of bacteria and other microorganisms do indicate the potential for contamination. Also research findings suggest that high plate counts inhibit the growth of coliform bacteria on laboratory media, thereby obscuring their presence.

TABLE 13

BACTERIOLOGICAL QUALITY OF RAW WATER FROM WELLS

Total Coliform		Fecal Coliform		Plate Count	
Density		Density		Number	
0/100 ml	91%	0/100 ml	98%	0/ml	17%
1/100 ml-4/100 ml	6%	1/100 ml-4/100 ml	1%	1/ml-100/ml	59%
5/100 ml-10/100 ml	1%	5/100 ml-10/100 ml	<1%	101/ml-500/ml	13%
11/100 ml-50/100 ml	1%	11/100 ml-50/100 ml	<1%	501/ml-1000 ml	4%
>50/100 ml	1%	>50/100 ml	<1%	>1000/ml	7%

Note: For this analysis 621 individual wells were studied.

Quality of Distributed Water

Overall Water Quality

Chemical and bacteriological samples were collected and analyzed from two or more points in the distribution systems of the water supply systems studied. The results for each constituent were then averaged to obtain a measure of the quality of the drinking water delivered by that water supply system. The concentration of the individual constituents was then compared to the Constituent Limits to determine whether or not they exceeded the limits. The number of water supply systems exceeding each limit is presented in Table 14. In addition, to assess how many water supply systems had multiple water quality problems, the number of systems that exceeded a given constituent limit plus at least one more is indicated.

These data indicate that the concentrations of only five constituents, alkyl benzene sulfonate, strontium-90, boron, silver, and cyanide (concentration may have decreased during transportation to the laboratory) were not above the limits of the DWS. In the recommended category, the expected problems with iron, manganese, and total dissolved solids is demonstrated, but few water supply systems exceeded the sulfate and chloride limits.

TABLE 14

NUMBER OF WATER SUPPLY SYSTEMS WHERE AVERAGE DELIVERED WATER EXCEEDED SPECIFIC CONSTITUENT LIMITS

Constituent	Number of Systems Exceeding Constituent Limit	Percent of All Water Supplies in Study	Number of Systems Exceeding One or More Additional Constituent Limit
RECOMMENDED			
Alkyl Benzene Sulfonate (ABS)	0	0	0
Arsenic	2	<1	2
Boron*	9	1	9
Chloride	9	1	9
Color	7	1	5
Copper	11	1	4
Carbon-Chloroform Extract (CCE)**	12	1	2
Cyanide	0	0	0
Fluoride	52	5	35
Iron	96	10	52
Manganese	90	9	45
Iron and/or Manganese	159	16	56
Nitrate	19	3	15
Radium-226	6	1	5
Strontium-90	0	0	0
Sulfate	25	3	25
Total Dissolved Solids (TDS)	95	10	62
Turbidity	26	3	17
Zinc	1	<1	1
MANDATORY			
Arsenic	2	<1	1
Barium	1	<1	0
Boron*	0	0	0
Cadmium	3	<1	3
Chromium (Hexavalent)***	4	<1	4
Coliform Organisms	120	12	34
Cyanide	0	0	0
Fluoride	24	2	17
Gross Beta Activity	0	0	0
Lead	14	1	6
Selenium	5	1	5
Silver	0	0	0

---

*Proposed for inclusion in the Drinking Water Standards.

**Measured in only 110 selected supplies, including 94 surface supplies.

***During this study total chromium was measured and compared to the standard.

This occurred in spite of the number of ground water sources studied. Some water supply systems were attempting to reduce the iron and manganese content of their delivered water by aeration. Of the 45 systems aerating, 87 percent were judged adequate by the field engineers.

A significant number of systems delivered water with high turbidity, which could cause problems with disinfection. Other systems had high concentrations of nitrate particularly in the ground water supplies of Southern California.

Many multiple water quality problems are evident in the recommended portion of Table 14. Here, considering each constituent separately, in every case, except for copper or CCE, more than 50 percent of the systems that exceeded a given Constituent Limit also exceeded the limit of some other constituent. Overall, about 30 percent of the 238 water supply systems exceeded more than one recommended Constituent Limit.

In the mandatory category, the presence of coliform organisms in densities greater than the standard was the major problem. This will be treated in detail later in this sub-section. The presence of the heavy metals such as cadmium, chromium and lead in a significant number of systems was somewhat surprising because these have mandatory limits. Apparently, some waters are aggressive enough to cause dissolution of these metals from the distribution piping. The occurrence of metal concentrations exceeding limits was more prevalent in waters with relatively low pH and specific conductance. Therefore, a need exists for more specific evaluation of the interrelationship between water stability and piping.

The average water quality of a water supply system is a legitimate measure of its overall performance, but consumers do not drink the average water, they drink water from a specific tap. In sampling various places in the water supply systems during the study, some very poor quality water was discovered. Each of the 2,595 samples collected at a consumer's tap, _de facto_ glasses of drinking water, was checked to see whether or not it exceeded any Constituent Limit. In addition, the population equivalent (population served by the system divided by the number of distribution samples taken in the system) of each glass of water tested was determined. This analysis showed that 36 percent of the samples tested exceeded at least one constituent limit and the population served the equivalent water was 2.9 million, 16 percent of the study population. This shows that a sizable portion of the American consumers are not receiving water that meets Drinking Water Standards.

Table 15 indicates that over 8 percent of these distribution samples exceeded the constituent limit for coliform organisms, total dissolved solids, manganese, or iron while over 4 percent of the samples exceeded the recommended fluoride limit. Overall,30 percent of the samples drawn at the tap had concentrations of chemicals that exceeded one or more DWS limit.

Based on percent of study population exposed, however, the order of major problems was as follows:

Constituent	Percent of Study Population Exposed to Water Exceeding Limit
Manganese	5
Iron	4
Total Dissolved Solids	3
Coliform Organisms	2
Lead	2
Nitrate	1
Turbidity	1
CCE (Organics)	1

This table indicates that the order of prevalence is different when using population exposed than when using percent of samples or percent of systems.

TABLE 15

NUMBER OF DISTRIBUTION SAMPLES EXCEEDING CONSTITUENT LIMITS

(Based on 2595 distribution samples)

All data are in mg/l except as noted

	Constituent Limit	Maximum Concentration Found	Number of Samples Exceeding Limit	Percent Exceeding Limit
RECOMMENDED				
ABS	0.5	0.41	0	0
Arsenic	0.01	0.10	10	0.4
Boron*	1.0	3.28	20	0.8
Chloride	250	1950	31	1.2
Color	15 un.	49	17	0.7
Copper	1.0	8.35	42	1.6
CCE	0.200	0.56	33	1.2^{a}
Cyanide	0.01	0.008	0	0
Fluoride	Varies	4.40	118	4.5
Iron	0.3	26.0	223	8.6
Manganese	0.05	1.32	211	8.1
Nitrate	45	127	53	2.1
Radium-226	3 pCi/l	135.9 pCi/l	16	0.6
Strontium-90	10 pCi/l	2 pCi/l	0	0
Sulfate	250	770	47	1.8
TDS	500	2760	219	8.5
Turbidity	5 un or 1 un#	53 un.	60	2.4
Zinc	5	13.0	8	0.3
MANDATORY				
Arsenic	0.05	0.10	5	0.2
Barium	1.0	1.55	2	<0.1^{a}
Boron*	5.0	3.28	0	0
Cadmium	@0.01	3.94	4	0.2
Chromium (Hexavalent)	0.05	0.079	5	0.2
Coliform Organisms	1/100 ml	2000/100 ml	228	8.8
Cyanide	0.20	0.008	0	0
Fluoride	Varies	4.40	55	2.2
Gross Beta Activity	1000 pCi/l	154 pCi/l	0	0
Lead	0.05	0.64	37	1.4
Selenium	0.01	0.07	10	0.4
Silver	0.05	0.03	0	0

*Proposed for inclusion in the Drinking Water Standards.

# Treated by more than disinfection

@During this study total chromium was measured and compared to the standard.

a - These constituents were evaluated only on selected samples. The remainder were assumed not to exceed the limit.

Of the items included in the DWS and measured in the study, only alkyl benzene sulfate, cyanide, silver, strontium-90, and gross beta activity were not encountered by some consumer in excessive quantities. Finally, as shown by the maximum concentration in Table 15, the following constituents were found in someone's drinking water at a concentration exceeding the limit by 10 times or more: arsenic (recommended limit), iron, manganese, radium-226, turbidity, cadmium, coliform organisms, and lead. This again demonstrates that although 59 percent of the water supply systems met the Drinking Water Standards on the average, at some locations in the systems studied, very poor quality water was found.

Coliform Organism Densities

The mandatory constituent limit most often exceeded in the CWSS was the coliform organism density limit. The limit was exceeded in 120 systems, 12 percent of the study total. Tables 16, 17, and 18 show how these data were related to source, size, and geographical distribution, respectively.

Table 16 indicates that the largely inadequately treated and unprotected spring supplies had the highest percentage of systems exceeding the limit, while the mixed well and spring sources were next. Well sources, although 67 percent unchlorinated, show a relatively low percentage exceeding the limit. As expected, the smallest communities had the poorest record with respect to coliform densities, see Table 17. This was confirmed by examination of the bacteriological records in the state and local health departments. Surprisingly, the systems serving the 10,000 to 25,000 population group were also poor. These communities must be large enough to attempt to treat a surface source, but too small to be able to properly accomplish the necessary treatment.

TABLE 16

TYPE OF WATER SUPPLY SYSTEMS THAT EXCEEDED THE COLIFORM DENSITY LIMIT

Type of System	Number of Systems	Number of Systems Exceeding	Percent Exceeding
Surface and Mixed Source	166	26	16
Spring Source	80	30	37
Well Source	496	41	8
Well and Spring Mixed Source	37	11	30
Finished Source	106	5	5
Special systems	84	7	8
Totals	969	120	12

TABLE 17

WATER SUPPLY SYSTEMS IN VARIOUS POPULATION SIZES WHERE DELIVERED WATER EXCEEDED THE COLIFORM DENSITY LIMIT

Population Range	Number of Systems	Number of Systems Exceeding	Percent of Systems Exceeding	Percent of Study Population Exceeding
<500	446	79	18	15
500-5,000	315	29	10	8
5,000-10,000	75	5	7	7
10,000-25,000	59	5	9	7
25,000-50,000	36	1	3	3
50,000-100,000	16	1	6	6
>100,000	22	0	0	0
Totals	969	120	12	2

TABLE 18

REGIONAL DISTRIBUTION OF WATER SUPPLY SYSTEMS WHERE DELIVERED WATER EXCEEDED THE COLIFORM DENSITY LIMIT

DHEW Region	Number of Systems	Number of Systems Exceeding	Percent Exceeding
I	218	63	29
II	221	12	5
III	30	2	7
IV	22	0	0
V	66	0	0
VI	88	8	9
VII	26	0	0
VIII	20	4	20
IX	278	31	11
Totals	969	120	12

TABLE 19

BACTERIOLOGICAL QUALITY OF DISTRIBUTED WATER RELATED TO CHLORINATION PRACTICE

Type of System	Chlorination Practiced	Number of Systems	Percent of Systems Exceeding Coliform Limit	Percent of Systems Containing Fecal Coliforms
Surface Water Source	No	11	64	64
	Yes	180	7*	7*
Mixed Ground and Surface Water Source	No	4	100	100
	Yes	50	14*	0
Spring Source	No	62	39	32
	Yes	12	17*	8*
Well Source	No	394	8	2
	Yes	204	5*	<1*
Mixed Spring and Well Source	No	27	41	33
	Yes	11	27*	27*
All Types	No	498	16	7
	Yes	456	8*	4*

*Almost all of these systems had no chlorine residual in the distribution system.

Table 17 shows that the combination of small communities and untreated springs in Region I caused 29 percent of all of the supplies there to exceed the coliform density limit. In the entire CWSS, 52 percent of all the systems exceeding the coliform density limit were in Region I. Although Region IX also has a number of non-disinfected sources, these are wells and therefore their coliform density data are much better than Region I. The four systems exceeding the coliform density limit in Region VIII were all small, less than 600 population. Three of these systems did not adequately disinfect.

Because coliform organisms and pathogens can be removed by adequate disinfection, the coliform density findings of the CWSS as related to disinfection practice is of interest. About one-half of the supplies studied reported that they did not disinfect their water, while the other half reported that they attempted disinfection. Table 19 compares the total coliform content and the fecal coliform content in the distribution systems of water supply systems that do and do not disinfect their water.

To examine the influence of disinfection practice on various waters, these data were divided into five source types. They show, as anticipated, that in all types a reduction in the percent of the systems exceeding the coliform density limit occurred when disinfection is practiced. Similar reductions also occurred in the fecal coliform content of samples taken from water supply systems that practice disinfection. Note that this table again shows the generally poor bacterial quality of spring sources. In most cases, the mere practice of disinfection did not completely remove all of the total coliform or fecal coliform from the distributed water. However, as seen from the footnote of Table 19, most of these positive results occurred in systems that disinfect, but do not maintain a chlorine residual throughout the distribution system.

The importance of maintaining a chlorine residual, if coliform organisms are to be eliminated from distribution system samples is presented in Table 20. In this table, the percent of samples (one water supply system may have several samples associated with it) showing the presence of total coliform is presented. Although the practice of chlorination causes a dramatic decline in the percent of the samples showing the presence of total coliforms, these organisms are not eliminated merely by claiming that chlorination is practiced. Unless chlorine residual was maintained in the distribution system a significant percent of the distribution samples contained the presence of total coliform. These organisms were nearly completely eliminated in systems that showed a trace of chlorine residual or greater.

TABLE 20

INFLUENCE OF CHLORINE RESIDUAL ON BACTERIOLOGICAL QUALITY OF DISTRIBUTED WATER

	Percent of Samples Showing Positive Coliforms		
Type of System	Unchlorinated Systems	All Chlorinated Systems	Chlorinated Systems that Maintained a Chlorine Residual
Surface Water Source	93	6	2
Mixed Ground and Surface Water Source	54	9	6
Spring Source	36	9	0
Well Source	11	3	0
Mixed Spring and Well Source	43	26	0
All Types	17	6	2

Fluorides

The Public Health Service suggests an optimum level of fluoride for all public water supplies as an effective public health measure to prevent tooth decay. As stipulated in the DWS, the optimum concentration is based on the annual average maximum daily air temperature for the given community and varies from 1.2 mg/l in cooler regions of the country to 0.7 mg/l in the warmer areas. Fluoride concentrations in public water supplies greater than 2 times the optimum level constitutes grounds for rejection of the supply, see Table 5. Excessive fluoride in drinking waters can produce objectionable dental fluorosis, while the reduction of as little as 0.3 mg/l of fluoride below the optimum level can noticeably reduce the dental health benefits. Fluoride levels in water supply systems must, therefore, be evaluated with respect to excessive fluorides as well as sub-optimum levels.

In this study only 104 water supply systems were providing drinking water containing the acceptable range of concentration of fluoride. Many supplies contain a natural source of fluoride, of these, only 47 happen to have an acceptable range of fluoride concentration while 28 exceed the recommended limit and 24 exceed the mandatory limit. Three supplies did attempt to defluoridate, but only 1 was successful.

Fluorides were added purposefully to 41 supplies, but 14 of these were not adding enough to have the average of all system samples in the acceptable range. One system was even adding somewhat over the recommended limit.

The other 30 systems that were providing water within the acceptable range of fluoride concentration were simply buying it from another system that had a natural or man-fed source. Obviously, better control of feeding fluorides is necessary to achieve the full benefit of this additive. The study indicated that of the 41 systems fluoridating, only 23 were manned by a certified operator or professional engineer.

Because 24 water supply systems were distributing water exceeding the mandatory fluoride limit at the time of the study, greater effort should be made by the industry to defluoridate to avoid any possibility of fluorosis in these communities.

Organics

The Drinking Water Standards recommend that the carbon-chloroform extractables (CCE) in a water supply should not exceed 0.200 mg/l where more suitable supplies exist or can be made available. Table 21 indicates that nearly 90 percent of the selected supplies tested for organics had CCE concentrations less than 0.200 mg/l. In spite of these results, one of the most prevalent consumer complaints reported by the operators during the CWSS was tastes and odors. This may have been caused by the reaction of chlorine with organics that produces accentuated chlorinous tastes and odors. Proper treatment with oxidants or adsorbants would minimize this problem.

As another indication of the taste and odor problem, about 20 percent of the surface source systems were practicing taste and odor control. Of these, 82 percent were adequate in the judgment of the field survey team.

TABLE 21

CARBON-CHLOROFORM EXTRACT DATA

Type of System	Percent Exceeding Limit	Number of Systems Sampled of this Type
Well Source	8	12
Mixed Ground and Surface Source	0	4
Surface Source	11	94
All Types	10	110

One aspect of the problem is that the carbon adsorption method (hereafter called CAM) for monitoring, only recovers a low percentage of the organic substances from water. First, it does not adsorb all of the organics present, and second, a large portion of those adsorbed are not removed by the chloroform extraction. This indicates the need for a better method to collect and measure the organics in drinking water.

A second problem in the area of organic sampling is the recovery of the organics from the water in unchanged forms. The CAM can be used as a gross indication of the concentration of organics in water, but the residues recovered are not always in their original form, but may be altered by the use of solvents and heat. A need exists to recover the organics in an unchanged form if they are to be identified and used in determining their toxicity via animal experiments.

During the CWSS, 160 samples were taken for pesticide analysis from surface sources and other selected supplies. Seven samples contained measurable quantities of pesticides. These were Lindane - 0.16 and 0.20 μg/l (proposed standard, 56 μg/l) and Dieldrin - 0.10 μg/l (proposed standard, 17 μg/l), Heptachlor - 0.20 and 0.20 μg/l (proposed standard, 18 μg/l), Aldrin - 0.10 μg/l (proposed standard, 17 μg/l) and Chlordane, 0.22 μg/l (proposed standard, 3 μg/l). An additional 80 showed a trace (detectable, but not measurable concentration) of one or more pesticides.

Control of Health Hazards

Health hazards defined in the Public Health Service Drinking Water Standards are "any conditions, devices or practices in the water supply system and its operation which create, or may create, a danger to the health and well-being of the water consumer." Detection of such health hazards requires a careful survey of the entire water supply system.

This section will summarize all the health hazards uncovered during the CWSS.

The health hazards found are divided into five categories: 1) source, 2) treatment, 3) distribution systems, 4) surveillance, and 5) personnel. For comparative purposes, some of the system deficiencies, which cause health hazards, reported in the previous section, Summary of Results, will be included here. The deficiencies found during this study in the five categories noted above, are presented in Figures 2, 3 and 4. These data indicate that over one-half of the identified deficiencies occurred in greater than 20 percent of the plants surveyed. This indicates the prevalence of a wide variety of health hazards in water treatment systems.

Two general areas of health hazards that are present in a high percentage of systems are those in distribution systems and those caused by inadequate surveillance. These two, along with operator training, which could be easily improved, will be discussed in detail.

Cross-Connection Control

The control of cross-connections is possible through knowledge of the problem and vigilance in preventing unprotected connections from occurring. Fifty-four percent of the community water supply systems surveyed did not have a cross-connection control ordinance and about 90 percent of the water supply systems had no program or were not effectively implementing any existing ordinance. While many (43 percent) of the community water supply systems were attempting to control cross-connections on new construction, 89 percent of the communities surveyed had no program for continuous re-inspection for cross-connection hazards. Although control of the hazard should begin at the treatment plant, common division walls between finished and lesser quality waters were observed in over six percent of the water systems providing treatment. A progressive program to control cross-connections was evident in only 11 percent of the community water supplies surveyed.

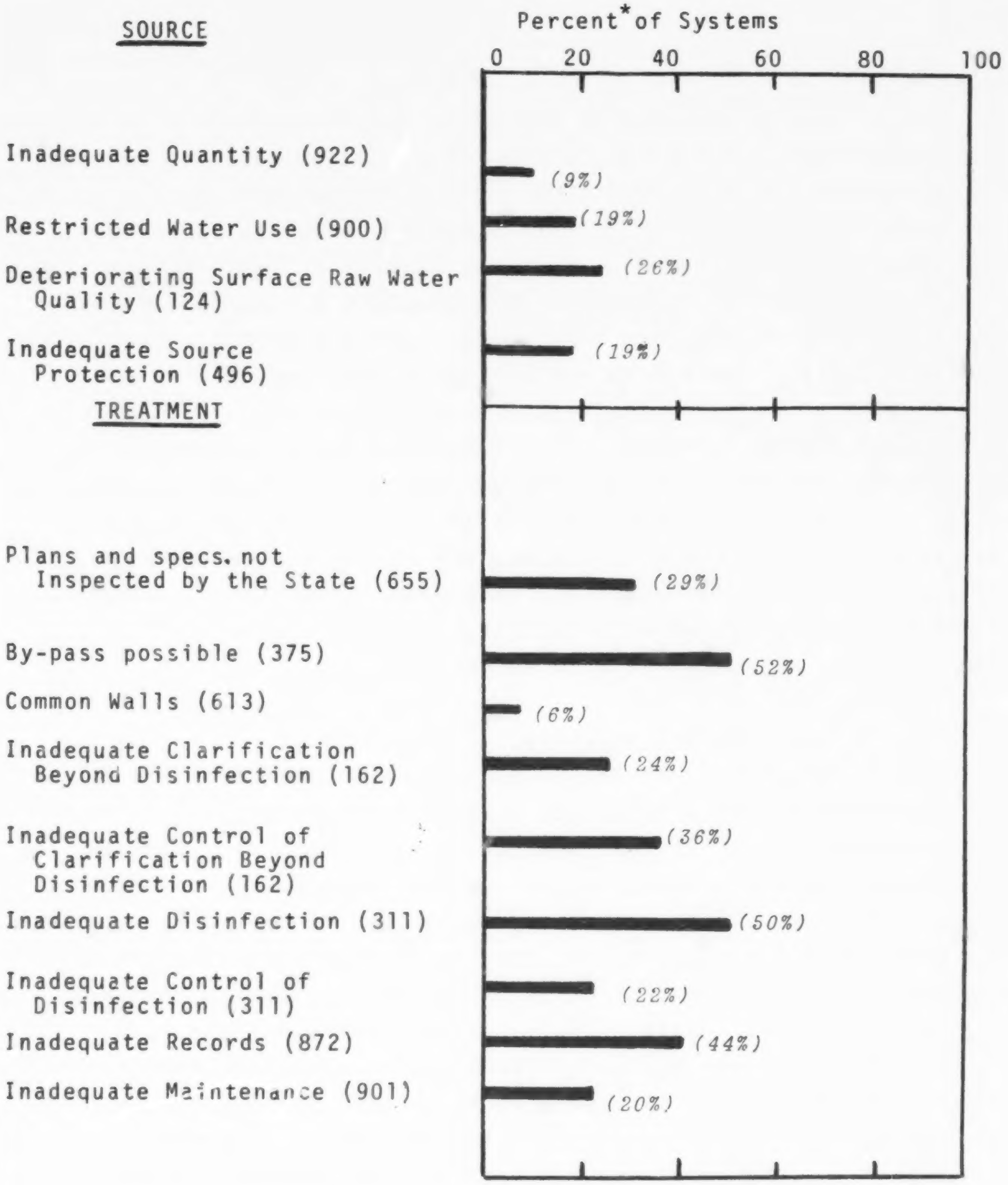

Fig. 2. DEFICIENCIES RELATED TO HEALTH HAZARDS- TREATMENT AND SOURCE

*Percent with deficiencies calculated on basis of supplies where applicable - number in parenthesis.

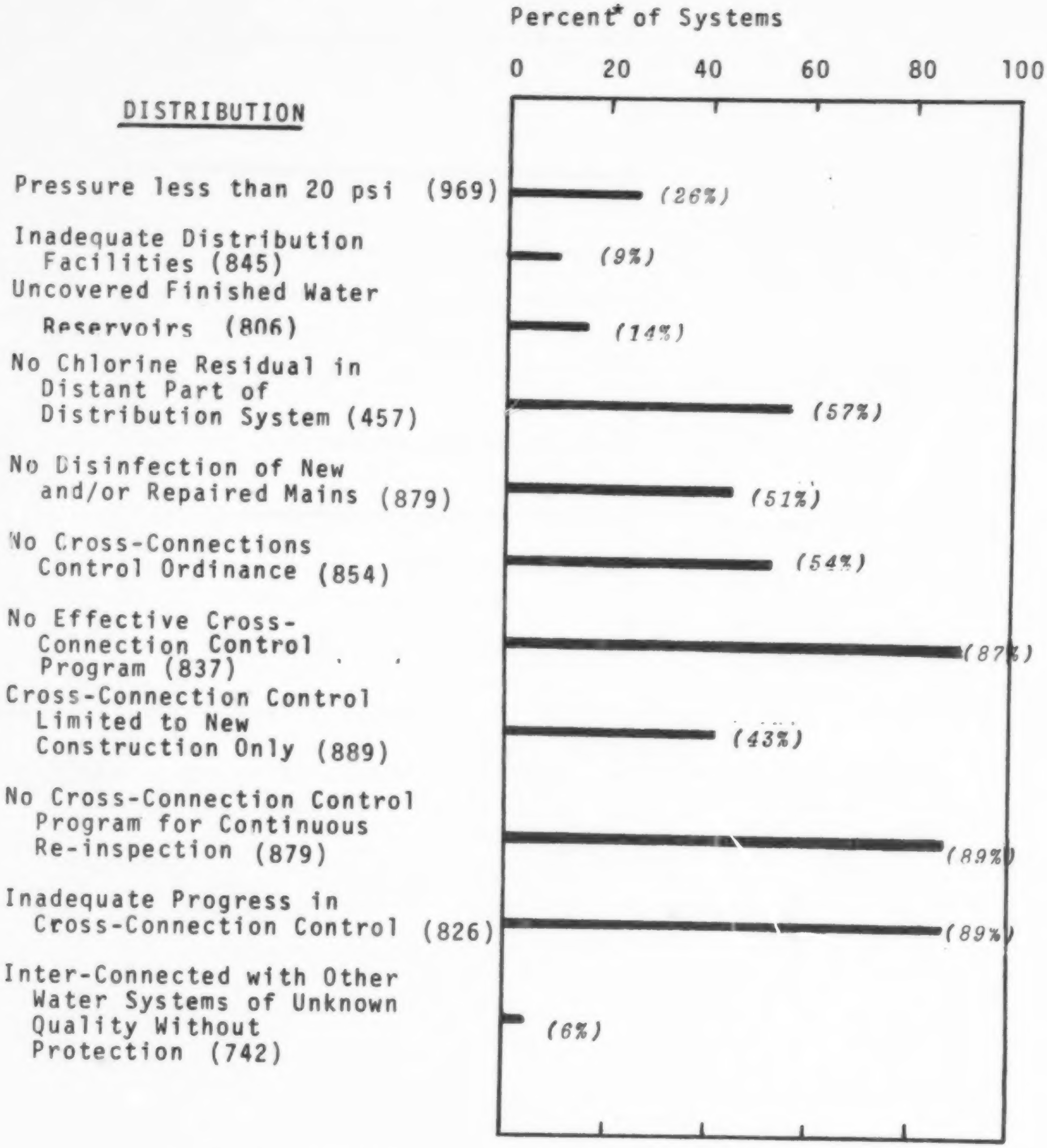

Fig. 3. DEFICIENCIES RELATED TO HEALTH HAZARDS - DISTRIBUTION SYSTEMS

*Percent with deficiencies calculated on basis of supplies where applicable - number in parenthesis.

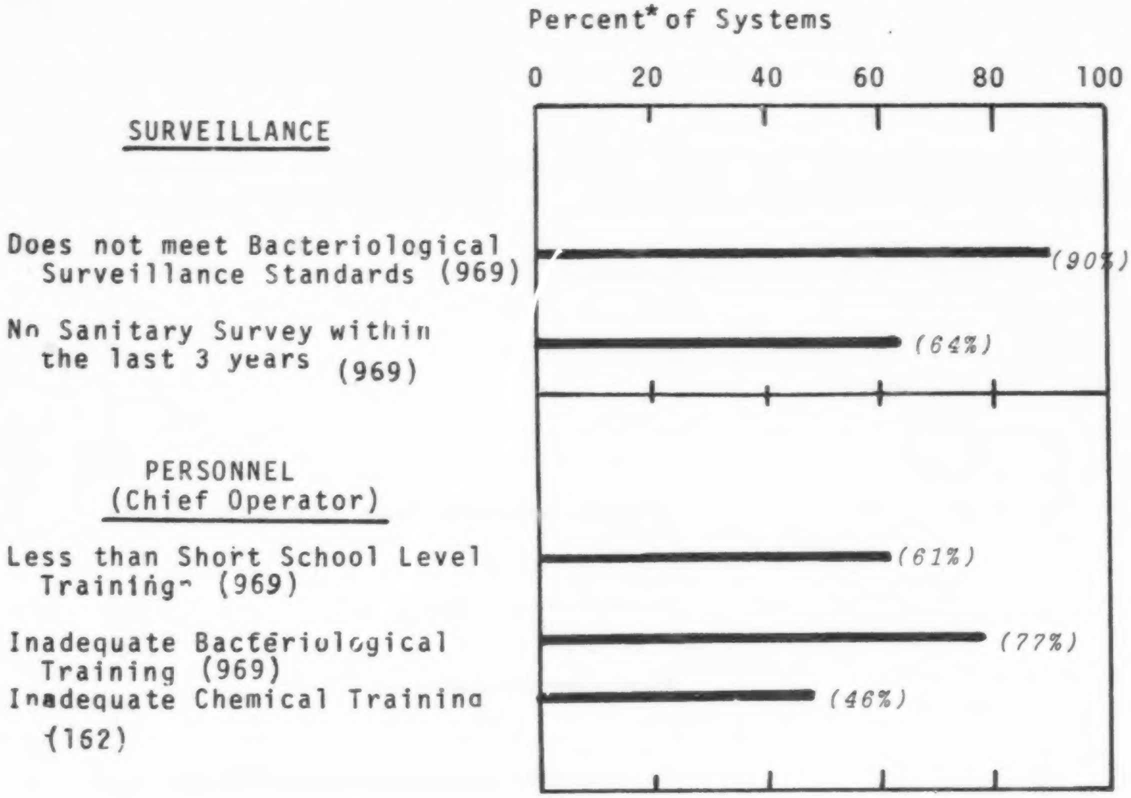

Fig 4. DEFICIENCIES RELATED TO HEALTH HAZARDS - SURVEILLANCE AND PERSONNEL

*Percent with deficiencies calculated on basis of supplies where applicable - number in parenthesis.

Surveillance

To prevent health hazards from developing in a water supply system, someone not associated with the supply should review operation procedures and the adequacy of physical facilities on a regular basis. These sanitary surveys should be at least as detailed as the reviews made during the Community Water Supply Survey, and may be more time-consuming depending on the complexity of treatment and the capabilities of the operators.

During the CWSS surveys, data were gathered on the dates of the most recent sanitary surveys. The data are shown in Table 22. The year 1968 was singled out as it was the last full calendar year preceding the study.

TABLE 22

ANALYSIS OF DATE OF LAST SANITARY SURVEY

Population Served	Percent of supplies reporting sanitary surveys during: 1968	1967-69	1960-66	Never or did not know
<500	13	26	8	66
500-5,000	22	40	10	59
5,000-10,000	33	44	8	48
10,000-25,000	38	51	3	46
25,000-50,000	24	41	5	54
50,000-100,000	19	50	12	38
>100,000	37	60	15	25
All supplies	21	36	8	56

CWSS engineers averaged 1.2 man-days per supply for field work. This single visit time investment did not include making arrangements for the field work or the preparation of written reports of their findings. Moreover, it did not include the all-important follow-up work with the local officials developing improvement programs and operator training and certification which are so necessary if the surveys are to be effective in securing proper facilities and effective operations.

An estimate of the national need for additional engineers in state and local health departments for water supply surveillance is:

Assumptions -

1. 19,236 water supplies
2. 4 man-days required per supply for plan review, meetings with governing bodies, surveys, report writing, training, etc.
3. 225 man-days equals 1 man-yr.
4. Personnel costs

$12,000	salary
2,500	fringe benefits
2,000	travel
500	office supplies
500	office space
2,500	1/3 secretary
$20,000	

5. 21 percent of supplies now being surveyed annually

19,236 x 0.79 x 4 man-days x 1/225 - 270 men
270 man-years x $20,000 = $5.4 million per year

The average annual cost of surveillance per supply would be 4/ 225 x $20,000 = approx. $350.

Aside from costs for production quality control by the plant personnel, two other additional costs associated with surveillance are the laboratory costs for the additional bacteriological and chemical analyses required to meet the 1962 U.S. Public Health Service Drinking Water Standards. Examination of 10 percent of the systems in the CWSS chosen at random showedthat these systems averaged 20 bacteriological samples below the standards per year. Assuming a laboratory cost of $10 per sample and 19,236 water supply systems in the country, $3.8 million per year is needed for these additional analyses. In the area of chemical analysis, only 10 percent of the systems studied measured the concentration of the constituents in Table 5 during the previous year. The 1962 U.S. Public Health Service Drinking Water Standards state, "Under normal circumstances, analyses for substances listed below [essentially Table 5] need only be made semiannually." Taking a laboratory cost of $150 to determine all of these constituents, an approximate cost of $5.2 million per year is needed for these analyses. Summing these three surveillance costs yields a figure of approximately $14 million to upgrade the nation's surveillance program.

Operator Experience and Training

The engineer making the water supply survey obtained information on experience and training from the principal operator at the treatment facility. This was the person whose wrong acts or failures to act could adversely affect water quality.

The results are presented in Table 23. The basic education level is relatively high. Only 16 percent failed to finish high school. However, 61 percent reported they had no water treatment training at the short school level or higher. Training was markedly lacking in microbiology and chemistry. Assuming that on-the-job training is how-to-do-it rather than the learning of fundamental why-we-do-it concepts, 77 percent were deficient in microbiological training and

TABLE 23

OPERATOR EXPERIENCE AND TRAINING

(All numbers are percent of responses)

	Percent
Education Level - High School or better	84
Water Treatment Training	39
Short Course or better	
Number of previous positions	58
None	.
Training in Sanitary Microbiology	
None	63
On-the-Job	14
Training in Chemistry (systems with more than disinfection)	
At short school or higher level	54
None or on-the-job	46
Full Time Operators	47
Staff adequate in (operator's opinion)	
Number	83
Knowledge	89
Salary	
$7,500/yr or less	84
$2,000/yr or less	37
Operators with more than 20 years experience	43
Operators with less than 2 years experience	15
Operators with less than 2 years experience who are also part-time operators	95

72 percent (overall) in chemistry. Chemistry training responses from facilities having more than disinfection treatment are more meaningful than overall figures. Forty-six percent of those operators were deficient in chemical training. Also note that 11 percent considered their staff lacking in water treatment knowledge. These untrained personnel are often unaware of the hazards to the consuming public that might result when water of substandard quality is produced. As an example, 9 percent of the supplies using gas chlorination reported interruptions to the disinfection process while changing cylinders, a completely unnecessary hazard to the consumer.

Of interest to the water supply industry is the 43 percent of the operators reporting more than 20 years experience. Their replacement represents a large manpower need during the next few years as they reach retirement age. Twenty percent of the operators reported less than 2 years water purification experience, so it appears new men are entering the field and there should be no personnel shortage providing compensation and job opportunities are attractive enough to retain them. Only 23 percent of these short-time experience operators are employed full-time by the water utility,which is disquieting. Some of them are full-time municipal employees having responsibilities in sewage treatment, building inspection, street maintenance or other departments. Others are employed by investor-owned companies and operate 2 or more water supplies for their employer. Some of these persons have entered the water supply field, but there were no data collected to permit an estimate of their number. With percentages rounded to whole numbers, the error from this source is within the precision of the measurement. Thus, the CWSS shows that 43 percent of the operators have more than 20 years experience and are approaching retirement and only 5 percent of the operators are new to the field (less than 2 years water purification experience) and working full-time to operate their supplies.

The 37 percent earning less than $2000 per year include most of the part-time operators. With about half the operators reporting earning between $2000 and $7500 per year and only 16 percent making more than $7500 (29 percent of the full-time operators), compensation may be an important factor in operator retention.

Effect of Size on Operation and Water Quality

The data suggest some benefits that may accrue from regionalization of water supplies. The first benefit would be reduced costs of health department surveillance. The CWSS included 547 systems that served less than 1,000 persons and 214 that served 1,000 to 5,000 persons. Although many of the small systems served isolated towns and subdivisions, the small systems are numerous enough to offer some possibility of mergers, reducing health department needs for men and money by 4 man-days, and $350 each year per system eliminated.

Table 24 compares data relating to laboratory control of treatment, experience and demonstrated capabilities of operators, and the water quality records for the previous year by population groups.

TABLE 24

EFFECT OF SIZE ON OPERATION AND WATER QUALITY

Item	<1000	1000-5000	>50,000
Supplies having bacteriological laboratory	2%	7%	72%
Supplies with operators having more than 5 yrs. experience	53%	75%	94%
Supplies with certified operators	11%	39%	88%
Supplies that met the bacteriological criteria 11 of the previous 12 months of record	7%	12%	24%

All data calculated as percent of responses to the individual questions.

Table 24 indicates that the larger systems provide better laboratory control, attract and hold better operators and have an increased probability of meeting the bacteriological surveillance criteria. Therefore, if smaller towns are close enough together to make their merger feasible, they might perform more like the larger communities shown in Table 24. This improvement in operation would benefit their customers, as well as ease the burden of surveillance that is presently on the state and local health departments.

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ECA-18 (CIN)
(2-69)

U.S. DEPARTMENT OF HEALTH, EDUCATION, AND WELFARE
Public Health Service
Consumer Protection and Environmental Health Service
Environmental Control Administration
Bureau of Water Hygiene

INVENTORY OF MUNICIPAL WATER FACILITIES

LATEST DATA IN PHS FILES

COMMUNITY	POPULATION ESTIMATED POPULATION SERVED	YEAR OPER. STARTED PRESENT SUPPLY PRESENT TREATMENT PLANT	OWNERSHIP
1	2	3	4

NUMBER OF SERVICES NUMBER OF METERS	LAB. CONTROL	SOURCE OF SUPPLY	SAFE YIELD IMPOUNDED MG MAXIMUM DEPEND. DRAFT (GR. WATER) MG
5	6	7	8

RATED PLANT CAPACITY MGD AVERAGE PLANT OUTPUT MGD	TREATMENT	DISTRIBUTION STORAGE PUMPED TO MAINS	IMPROVEMENTS NEEDED
9	10	11	12

FORM APPROVED:
BUDGET BUREAU NO.

CURRENT DATA

STATE

COMMUNITY OR FACILITY
Correct legal name
LOCATION
(1) a
Postal address of utility

COUNTY
(1) b

1960 CENSUS POPULATION (2) a

CURRENT ESTIMATED POPULATION SERVED (2) b

LAB. CONTROL (3)

OWNERSHIP (4)

(5) CLASSIFICATION	NUMBER OF SERVICES	NUMBER OF METERS	MGD AVG. WATER
RESIDENTIAL a			
COMMERCIAL b			
INDUSTRIAL c			
PUBLIC d			
TOTAL e			

SOURCE OF SUPPLY (6)

SAFE YIELD IMPOUNDED MG (7) a

MAXIMUM DEPENDABLE DRAFT (GR. WATER) MG (7) b

RATED CAPACITY MGD (8) a

AVERAGE (8) b OUTPUT MGD

EMERGENCY POWER (8) c

TREATMENT (9) a

DIST. STORAGE

PUMPED TO MAINS MG (10) a

GRAVITY TO MAINS MG (10) b

IMPROVEMENTS NEEDED (11)

REMARKS

PHS USE

BOB #85-S69004
Exp. March 1970

MUNICIPAL WATER SUPPLY SANITARY SURVEY

SURVEY DATE

1. Leave this blank (for office use only) 1 12 (DUP. ON EVERY CARD) Date of your visit 13 mo. day yr. 18

2. Name of supply Same as on inventory

3. Location Same as on inventory
post office common name, if different

4. Demands, MGD:

	PRESENT	10-YR. ESTIMATE	UNKNOWN
A. Avg. day	From 19 23	☐☐☐☐☐ 24 28	☐ 30
B. Max. day	Plant 31 35	☐☐☐☐☐ 36 40	☐ 42
C. Max. month	Records 43 47	☐☐☐☐☐ 48 52	☐ 54

5. Water use has been restricted ☐☐ 55 56 times for a total of ☐☐☐ 57 59 days during any one year of the past 5 years.

6. LABORATORY CONTROL

A. Bacteriological (Distribution system only)

From Fig 1- D.W.S.

(1) Min. number samples recommended per month by PHS DWS → ☐☐☐ 60 62 UNKNOWN

(2) Avg. number/month for last 12 months ☐☐☐ 63 65 ☐ 67

May be

(3) Range of least and most monthly samples from zero 68 70 to ☐☐☐ 71 73 ☐ 75

(4) Number of months the Drinking Water Standards were not met during the last 12 months for: END CARD ONE 1 80

No. of months UNKNOWN

(a) Quality — Sec 3.2 - D.W.S. ☐☐ 13 14 ☐ 15

(b) Number of samples {Months when sample numbers < no. in 6.A.(1) ☐☐ 16 17 ☐ 18

(c) NONE collected No samples for ___ months. ☐☐ 19 20 ☐ 21

(5) Are samples representative of distribution system? Judge from map of distribution system. ☐ 22 yes ☐ 23 no

(6) Are check samples collected as provided for in the Drinking Water Standards? Sec 3.15 - D.W.S. ☐ 24 yes ☐ 25 no

From plant records

(7) Are samples requiring check samples reported by telephone? ☐ 26 yes ☐ 27 no

(8) Is the laboratory certified? ☐ 28 yes ☐ 29 no

(a) Within the past 3 years? ☐ 30 yes ☐ 31 no

(b) If "yes" to one or both, by whom was it certified. ☐ 32 State ☐ 33 PHS

(9) Are samples received by lab within 30 hours? ☐ 34 yes ☐ 35 no

Information from operator

ECA-19

Name on each page

2

B(1)-(4) refer to Sec. 5.2 - DWS.

B. Chemical (finished water only)

(1) Samples of finished water are analyzed each ☐ 36 month, ☐ 37 year, ☐ 38 2 years, ☐ 39 3 years, ☐ 40 infrequently ☐ 41 never.

(2) Type of analysis: ☐ 42 everything complete (DWS) ☐ 43 partial. If any constituent missed

(3) Date of last chemical analysis ☐☐ 45 mo. ☐☐ day ☐☐ yr 50

(4) Analyzed by ☐ 51 utility, ☐ 52 state, ☐ 53 PHS, ☐ 54 university, ☐ 55 other.

(5) Tests run for operational control and their frequency are:

Tests	Frequency Continuous	Each shift	Daily	Weekly	Less frequently than weekly.
Alkalinity	☐ 57	☐	☐	☐	☐ 61
Aluminum	☐ 62	☐	☐	☐	☐ 66
Chloride	☐ 67	☐	☐	☐	☐ 71
Chlorine residual (END CARD TWO) 2 80	☐ 72	☐	☐	☐	☐ 76
Color	☐ 13	☐	☐	☐	☐ 17
Fluoride	☐ 18	☐	☐	☐	☐ 22
Hardness	☐ 23	☐	☐	☐	☐ 27
Iron	☐ 28	☐	☐	☐	☐ 32
Jar tests	☐ 33	☐	☐	☐	☐ 37
Manganese	☐ 38	☐	☐	☐	☐ 42
pH	☐ 43	☐	☐	☐	☐ 47
Taste & Odor	☐ 48	☐	☐	☐	☐ 52
Turbidity	☐ 53	☐	☐	☐	☐ 57
Zeta potential	☐ 58	☐	☐	☐	☐ 62
Other ____________	☐ 63	☐	☐	☐	☐ 67

Note other frequencies

C. Radioactivity

(1) Samples are analyzed each ☐ 69 month, ☐ 70 year, ☐ 71 2 years, ☐ 72 3 years, ☐ 73 infrequently ☐ 74 never. (END CARD 3) 3 80

(2) Date of last radiological analysis ☐☐ 13 mo. ☐☐ day ☐☐ yr 18

(3) Analyzed by ☐ 19 utility, ☐ 20 state, ☐ 21 PHS, ☐ 22 university, ☐ 23 other. (specify)

7. SANITARY SURVEY

A. Date of most recent survey ☐☐ mo. ☐☐ day ☐☐ yr. 29 or ☐ 30 no

By others - Not this one

B. Survey made by: ☐ 31 state, ☐ 32 PHS, ☐ 33 local health department,
☐ 34 utility, ☐ 35 consultant.

"Survey" requires written report of findings

C. Facilities surveyed: ☐ 36 source, ☐ 37 transmission, ☐ 38 treatment,
☐ 39 storage, ☐ 40 distribution.

8. FACILITIES & OPERATION (describe deficiencies on reverse side)

	YES	NO
A. Are there common walls between finished and lesser quality water?	☐ 41	☐ 42
B. Are there inter-connections to other "systems" {Sub-divisions, private industrial, community		
(1) of known acceptable quality indicated by state health dept acceptance.	☐ 43	☐ 44
(2) of unknown quality		
(a) with protection Note how protected	☐ 45	☐ 46
(b) without protection	☐ 47	☐ 48
C. Is there a cross-connection control program		
(1) on new construction only	☐ 49	☐ 50
(2) for continuous re-inspection	☐ 51	☐ 52
D. Are finished water reservoirs properly covered?	☐ 53	☐ 54
E. Is there detectable chlorine residual in distant parts of the distribution system?	☐ 55	☐ 56
F. Can the treatment plant be by-passed?	☐ 57	☐ 58
G. Are there satisfactory procedures to:		
(1) prevent personal accidents	☐ 59	☐ 60
(2) prevent chlorine accidents	☐ 61	☐ 62
(3) disinfect all new and/or repaired distribution system mains, valves, fittings, including check samples before being placed in service?	☐ 63	☐ 64
H. Are there areas of low pressure (< 20 psi) in the distribution system under maximum water use?	☐ 65	☐ 66

I. Operating problems most often encountered are: ☐ 67 taste & odor
☐ 68 phenols, ☐ 69 corrosive water, ☐ 70 short filter runs, ☐ 71 other, specify.

8. FACILITIES & OPERATION, continued

J. Chlorination process was interrupted ☐☐ (72 73) times in the last 12 months.

(1) Interruptions were due to: ☐ (74) chlorinator failure, ☐ (75) feedwater pump, ☐ (76) changing cylinders, ☐ (77) power failure, ☐ (78) other, explain.

(END CARD 4) 4 (80)

K. Percent of land area within service area where water is available (nearest whole percent' ☐☐☐ (13 15) %.

		YES	NO
L.	Were plans and specs. for treatment plant approved by the state?	☐ 16	☐ 17

9. SOURCE, TREATMENT & DISTRIBUTION (describe deficiencies on reverse side) Note

A. Are the following adequate:

	YES	NO
(1) Source, with respect to the following:		
(a) quantity	☐ 18	☐ 19
(b) bacteriological quality	☐ 20	☐ 21
(c) chemical quality	☐ 22	☐ 23
(d) physical quality	☐ 24	☐ 25
(e) adequate protection	☐ 26	☐ 27
(2) Transmission of raw water	☐ 28	☐ 29
(3) Is the raw water sampled for:		
(a) Bacteriological contamination	☐ 30	☐ 31
(b) Chemical contamination	☐ 32	☐ 33
(4) Treatment, with respect to the folowing:		
(a) aeration	☐ 34	☐ 35
(b) chemical feed, capacity	☐ 36	☐ 37
(c) chemical feed, stand-by equipment	☐ 38	☐ 39
(d) chemical mixing	☐ 40	☐ 41
(e) flocculation	☐ 42	☐ 43

} Refer to PHS No. 1820

9. SOURCE, TREATMENT & DISTRIBUTION, continued

A. Are the following adequate (continued):

	YES	NO
(4) Treatment, continued:		
(f) settling	☐ 44	☐ 45
(g) recarbonation	☐ 46	☐ 47
(h) filtration At normal operating rates	☐ 48	☐ 49
(i) disinfection, capacity	☐ 50	☐ 51
(j) disinfection, stand-by equipment	☐ 52	☐ 53
(k) taste & odor control	☐ 54	☐ 55
(l) fluoridation	☐ 56	☐ 57
(5) Distribution, with respect to the following:		
(a) storage	☐ 58	☐ 59
(b) booster chlorination	☐ 60	☐ 61
(c) high service pumping	☐ 62	☐ 63
(d) booster pumping	☐ 64	☐ 65
(e) pressure	☐ 66	☐ 67
(6) Maintenance	☐ 68	☐ 69
(7) Records for:		
(a) disinfection	☐ 70	☐ 71
(b) filter runs	☐ 72	☐ 73
(c) chemical consumption	☐ 74	☐ 75
(d) operational control tests	☐ 76	☐ 77
(e) bacteriological examinations	☐ 78	☐ 79
(8) Cross-connection control	END CARD 5	5 80
(a) ordinance	☐ 13	☐ 14
(b) program implementation	☐ 15	☐ 16
(c) progress	☐ 17	☐ 18

9. SOURCE, TREATMENT & DISTRIBUTION, continued

B. During the past 3 years, raw water quality has ☐ 19 improved, ☐ 20 deteriorated, or ☐ 21 stayed the same.

10. PERSONNEL

A. Water Purification Operator

This is the responsible plant operator - Not sup't.

(1) Highest level of formal education: ☐ 22 8th grade or less, ☐ 23 high school, ☐ 24 technical or trade school, ☐ 25 university.

(2) Level of training in water treatment: ☐ 26 college course, ☐ 27 technical or trade school, ☐ 28 short school, ☐ 29 on the job, ☐ 30 none, ☐ 31 other, specify ________________________________.

(3) Length of time on this job: ☐☐ 32 33 years, ☐☐ 34 35 months.

(4) Number of previous positions as water treatment operator ☐☐ 36 37

(5) Total years of water purification experience ☐☐ 38 39

Get operator data for each supply even if there is no treatment.

(6) Level of study in sanitary microbiology: ☐ 40 college course, ☐ 41 technical or trade school, ☐ 42 short school, ☐ 43 on the job, ☐ 44 none, ☐ 45 other, specify ________________________________.

(7) Level of study in water chemistry: ☐ 46 college course, ☐ 47 technical or trade school, ☐ 48 short school, ☐ 49 on the job, ☐ 50 none, ☐ 51 other, specify. ________________________________.

(8) Is the operator a full-time employee? ☐ 52 yes ☐ 53 no

(9) Salary range (per year) of operator: ☐ 54 <$1,999 ☐ 55 $2,000-4,999 ☐ 56 $5,000-7,499 ☐ 57 $7,500-9,999 ☐ 58 $10,000

10. PERSONNEL, continued

A. continued

(10) Is your present staff adequate in: Operator's opinion

(a) number ☐ 60 yes ☐ 61 no

(b) quality ☐ 62 yes ☐ 63 no

B. Operator's major complaint

C. Most frequent customer's complaint: Received by utility.

D. Management's most frequent complaint:

11. FINANCIAL INFORMATION

A. Bonded indebtedness: (water supply)

(1) General obligation bonds $ ☐☐☐☐☐☐☐☐. 66 73 END CARD 6 6 80

(a) statutory limit $ ☐☐☐☐☐☐☐☐. 13 20

(2) Revenue bonds $ ☐☐☐☐☐☐☐☐. 21 28

(a) statutory limit $ ☐☐☐☐☐☐☐☐. 29 36

B. Capital stock, par value $ ☐☐☐☐☐☐☐☐. 37 44

bonds, par value $ ☐☐☐☐☐☐☐☐. 45 52

C. Water funds are ☐ 53 kept separate or ☐ 54 mingled with other funds.

D. Is there an annual payment to the general fund? ☐ 55 yes ☐ 56 no

E. Operation is controlled by: ☐ 57 mayor-council, ☐ 58 mayor-commission,
☐ 59 independent water board, ☐ 60 other, specify.________________.

For city, district, etc owned only

F. Is there active planning for expansion or improvement? ☐ 61 yes ☐ 62 no

(1) Value of planned improvement $ ☐☐☐☐☐☐☐☐. 63 70

(2) Planning by utility ☐ 71 yes ☐ 72 no utility only

(3) Planning by consultants ☐ 73 yes ☐ 74 no utility & consultants

END CARD 7 7 80

G. If expansion is planned, it will be carried out within:

	1 YR.	2-5 YRS.	6-10 YRS.
(1) Source	☐ 13	☐	☐ 15
(2) Treatment	☐ 16	☐	☐ 18
(3) Distribution	☐ 19	☐	☐ 21
(4) Other ____________	☐ 22	☐	☐ 24

H. Costs of production:

	CENTS/1,000 GALLONS
(1) Chemicals	☐☐.☐ 26 28
(2) Labor, power, etc.	☐☐.☐ 29 31
(3) Depreciation	☐☐.☐ 32 34
(4) Other, including office, administration, meter reading, collection, etc.	35 ☐☐.☐ 37
(5) Total	☐☐.☐ 38 40

11. **FINANCIAL INFORMATION, continued**

I. **Tariff (Residential)**

(1) Connection fee $ ☐☐☐☐. 41 44

(2) Sales unit is ☐ 45 per 1,000 gallons or ☐ 46 per 100 cu. ft.

(a) ☐☐☐ 47 cents for the first ☐☐ 50 51 units

(b) ☐☐☐ 52 cents for the next ☐☐ 55 56 units

(c) ☐☐☐ 57 cents for the next ☐☐ 60 61 units

(d) etc. as needed to cover steps.

Adjust all rates to these units.

END CARD 8 8 80

Note flat rate here as $/time unit.

ECA-9 (CIN)
(1-69)

UNITED STATES PUBLIC HEALTH SERVICE
ENVIRONMENTAL CONTROL ADMINISTRATION
BUREAU OF WATER HYGIENE
IDENTIFICATION OF WATER SAMPLE

SERIAL NO. 9441
PUNCH IN COLS. 1 6

1. LOCATION OF WATER SUPPLY Same as on inventory
CITY, COUNTY, STATE

FOR OFFICE USE ONLY ☐☐☐☐☐☐☐☐☐☐☐☐ 7 18

DO NOT WRITE BELOW THIS LINE

2. WATER SUPPLY NAME Same as on inventory

3. DATE OF SAMPLING BEGINNING DATE OF COMPOSITE MO. DAY ☐☐☐☐ 19 22 ENDING DATE OF COMPOSITE OR DATE OF GRAB SAMPLE MO. DAY YR. ☐☐☐☐☐☐ 23 28

4. SAMPLE FROM ☐ TREATMENT PLANT 8 ☐ WELL 4 ☐ RESERVOIR 2 ☐ DISTRIBUTION SYSTEM 1 ☐ OTHER 0 | ☐ 29

5. SAMPLING POINT LOCATION AND/OR DESCRIPTION i.e. kitchen, 1234 Main | ☐☐☐ 30 32

6. TYPE OF WATER SAMPLED ☐ FINISHED 8 ☐ PARTIALLY TREATED 4 ☐ RAW 2 ☐ OTHER 0 | ☐ 33

7. SOURCE OF WATER ☐ SURFACE 8 ☐ GROUND 4 ☐ COMBINED 2 ☐ OTHER 0 | ☐ 34

8. SAMPLING METHOD ☐ COMPOSITE 8 ☐ GRAB 4 ☐ OTHER 0 | ☐ 35

9. ANALYSIS REQUIRED ☐ ORGANIC 8 ☐ TRACE ELEMENTS 4 ☐ WET 2 ☐ RADIO-CHEMICAL 1 ☐ OTHER 0 | ☐ 36

10. WATER SUPPLY CATEGORY ☐ COMMUNITY WATER SUPPLY 8 ☐ ICWS 4 ☐ FEDERAL INSTALLATION 2 ☐ SPECIAL STUDY 1 ☐ OTHER 0 | ☐☐☐ 37 39

11. APPEARANCE OF SAMPLE ____________________

12. ADDITIONAL REMARKS ____________________

13. COLLECTED BY ____________________ ☐ USPHS STAFF ☐ OTHER | 1 80

DO NOT WRITE BELOW THIS LINE

LAB. SAMPLE NO. ____________________ DATE RECEIVED ____________________

LABORATORY REMARKS

OVER FOR INSTRUCTIONS

INSTRUCTIONS: EVERY ITEM OF INFORMATION REQUIRED FROM THE SAMPLER IS NUMBERED (1 THROUGH 13). THESE ARE THE ONLY RESPONSES THE SAMPLER SHOULD MAKE. NOTE AREAS MARKED ''DO NOT WRITE BELOW THIS LINE'' AND ''FOR OFFICE USE ONLY.''

ITEM 1 SHOULD BE THE LOCATION OF THE WATER SUPPLY FACILITY WHICH PRODUCED THE WATER FOR THE SAMPLE. (EXAMPLE: CINCINNATI, HAMILTON, OHIO.)

ITEM 2 SHOULD BE THE FULL NAME OF THE WATER SUPPLY FACILITY. (EXAMPLE: CINCINNATI MUNICIPAL WATER WORKS)

ITEMS 4, 6, 7, AND 8 - CHECK THE BOX WHICH APPLIES

ITEMS 9 AND 10 - CHECK ONE OR MORE BOXES AS NECESSARY

ITEMS 3, 5, 11, 12, AND 13 SHOULD BE SELF-EXPLANATORY

ANY RESPONSE OF ''OTHER'' OR ''SPECIAL STUDY'' SHOULD BE EXPLAINED UNDER ITEM 12 - ADDITIONAL REMARKS.

IF NECESSARY FOR COMPLETE IDENTIFICATION OR EXPLANATION, PLEASE FEEL FREE TO USE THE BACK OF THE ORIGINAL (WHITE) COPY OR ATTACH AN ADDITIONAL PAGE OF LIKE SIZE.

DISTRIBUTION:

MAIL ORIGINAL (WHITE COPY) TO:

WATER QUALITY REGISTER BRANCH
BUREAU OF WATER HYGIENE
222 E. CENTRAL PARKWAY
CINCINNATI, OHIO 45202

BLUE	ENCLOSED WITH ORGANIC SAMPLE
PINK	ENCLOSED WITH TRACE METAL SAMPLE
YELLOW	ENCLOSED WITH WET CHEMISTRY SAMPLE
GREEN	ENCLOSED WITH RADIOCHEMICAL SAMPLE
TAN	RETAINED BY REGIONAL OFFICE OR SAMPLER

REPORT OF WATER SUPPLY USED ON INTERSTATE CARRIERS

FOR USE OF PHS REGIONAL OFFICE

☐☐☐☐☐☐☐☐☐☐☐☐

(Location code)

1. NAME OF WATER SUPPLY FACILITY

LOCATION *(City, County, State)*

2. WATER SUPPLY OFFICIAL CONTACTED *(Name and Title)*

3. DATE THIS SURVEY MADE MO. ☐☐ DAY ☐☐ YR. ☐☐

4. DATE OF LAST PHS - STATE JOINT SURVEY MO. ☐☐ DAY ☐☐ YR. ☐☐

5. POPULATION SERVED BY DISTRIBUTION SYSTEM *(To the nearest hundred)* ☐☐☐☐☐☐☐ .

6. OWNERSHIP
1 = Public
2 = Private ☐

7. SOURCE
1 = Surface
2 = Ground
3 = Combination ☐

8. TREATMENT USED -- 1 = YES, 2 = NO

☐ Disinfection	☐ Coagulation	☐ Rapid Sand Filtration	☐ Fluoridation	☐ Taste and Odor Control
☐ Lime Softening	☐ Ion Exchange	☐ Settling	☐ Iron Removal	☐ Other *(If yes describe under 13).*

9. LOCAL WATER SUPPLY PROGRAM -- 1 = YES, 2 = NO

☐ A. Is there a continuous program, such as a cross-connection survey, to detect health hazards and sanitary defects within the water distribution system?

☐ B. If there is a program such as described in "A" above are sanitary defects and health hazards being removed systematically and at a rate which is satisfactory?

☐ C. Does the community have an adequate plumbing code, such as the National Plumbing Code, or are there rules and regulations prohibiting connections or arrangements by which liquids, steams, gasses, or chemicals of unsafe, unknown, or questionable quality may be discharged or drawn into the public water supply?

☐ D. Are there provisions to enforce such code or rules and regulations on new construction?

☐ -- on major repairs and reconstruction?

☐ E. Are the principal plant operators certified or licensed under a state program?

☐ -- is such certification or licensing compulsory?

CHEMICAL ANALYSIS (mg./1) (A blank indicates no report)

10. ☐☐ ☐☐ ☐☐ Date last chemical sample taken
MO. DAY YR. How often are chemical analyses made?

Alkalinity (as Ca CO_3)
Arsenic (.05)**(.01)*
Barium (1.0)*
Cadmium (.01)**
Chromium Hexavalent (.05)**
Cyanide (.2)** (.01)*
Fluoride
Lead (.05)**
Hardness (as Ca CO_3)
Selenium (.01)**

Silver (.05)**
ABS (.5)*
Chloride (250)*
Copper (1.0)*
CCE (.2)*
Iron (.3)*
Manganese (.05)*
Nitrate (NO_3 (45)*
Phenols (.001)*
Sulfates (250)*

TDS (500)*
Zinc (5.0)*
pH
Magnesium

*RECOMMENDED MAXIMUM **MAXIMUM CHEMICAL LIMITS --MG/L

PHYSICAL AND RADIOCHEMICAL ANALYSIS

11. How often are physical analyses made?

PHYSICAL	RADIOCHEMICAL
Turbidity (5 s.u.)	SR ^{90} (10 $\mu\mu$c/1)\*
Color (15 s.u.)	RA ^{226} (3 $\mu\mu$c/1)\*
Odor (3 s.u.)	GROSS BETA (1000 $\mu\mu$c/1)\*
Avg. Water Temp. (°F)	GROSS ALPHA
Avg. Air Temp. (°F)	SR ^{89}
	I ^{131}

* Limits from 1962 PHS Drinking Water Standards

BACTERIOLOGICAL EXAMINATIONS

12. ☐☐☐☐ Minimum number of samples required per month①	LABORATORIES	DATES OF MOST RECENT LABORATORY CERTIFICATIONS
NAMES OF LABORATORY CERTIFYING AUTHORITIES		

MONTH AND YEAR		NUMBER OF SAMPLES	TUBE METHOD ☐ 10 ML. OR ☐ 100 ML. STANDARD PORTIONS					MEMBRANE FILTER METHOD					
			NUMBER	NUMBER POSITIVE ②	% POSITIVE ③	SAMPLES HAVING 3 OR MORE 10 ML. OR 5 100 ML. PORTIONS POSITIVE ④		MONTH AND YEAR		NUMBER OF SAMPLES	MEAN COLIFORM DENSITY PER 100 ML. ⑤	SAMPLES HAVING COLIFORM DENSITIES EXCEEDING 3/50, 4/100, 7/200, 13/500 MLS. ⑥	
MO.	YR.					NUMBER	% POSITIVE	MO.	YR.			NUMBER	% POSITIVE

Footnotes:

1. See Figure 1 PHS Drinking Water Standards (1962)
2. Any member of the coliform group of bacteria.
3. Should not exceed 10% per month, if 10 ml. portions are used, or 60% if 100 ml. portions are used.
4. If 10 ml. portions are used, should not exceed 5% in 20 or more samples per month nor one sample in less than 20 per month; if 100 ml. portions are used, should not exceed 20% in 5 or more samples per month nor one sample in less than 5 per month.
5. The arithmetic means density of all standard samples per month shall not exceed 1 per 100 ml.
6. Should not exceed 5% in 20 or more samples per month, nor 1 sample in less than 20 per month.
7. Maximum daily air temperature average for at least 5 years.

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13. COMMENTS: *(Use additional sheet if necessary. Furnish complete description every three years)*

REVIEWING ENGINEER *(Name and Title)*	AGENCY
CLASSIFICATION RECOMMENDED 1–Approved 2–Provisionally Approved 3–Prohibited ☐	EXPIRATION DATE *(If provisionally approved)* ☐☐ MO. ☐☐ DAY ☐☐ YR.

DATE OF REVIEW ☐☐ MO. ☐☐ DAY ☐☐ YR.	SIGNATURE OF STATE HEALTH OFFICIAL	TITLE IF OTHER THAN REVIEWER

PHS-682 (BACK)
REV. 10-64

HEW-Les

LISTING OF WATER SUPPLIES FROM THE "CWSS"

100000000000 STATE OF VERMONT[1]

I. D. #	POP.	NAME OF SUPPLY			
150005600100	163	ALBANY WATER SUPPLY CO.	BOX 7	ALBANY, VERMONT	05820
150008400070	600	ALBURG WATER DEPT.	CITY HALL	ALBURG, VERMONT	05440
150011200020	1500	ARLINGTON WATER COMPANY	CITY HALL	BENNINGTON, VERMONT	05201
150011250020	045	RED MOUNTAIN WATER CO.		ARLINGTON, VERMONT	05250
150014000140	075	ASCUTNEY WATER SUPPLY		ASCUTNEY, VERMONT	05030
150019600060	350	BAKERSFIELD WATER WORKS	BOX 84	BAKERSFIELD, VT.	05441
150025200030	200	DUNBAR WATER SYSTEM		BARNET, VERMONT	05821
150028000120	10387	BARRE WATER DEPT.	CITY HALL	BARRE, VERMONT	05641
150028050120	250	CENTRAL VERMONT HOSPITAL	BOX 547	BARRE, VERMONT	05641
150028060120	120	PERRY WATER SYSTEM	32 PERRY ST.	BARRE, VERMONT	05641
150030800100	1100	BARTON VILLAGE WATER DEPT.	CITY HALL	BARTON, VERMONT	05822
150036400100	200	BEEBE WATER WKS.(BEEBE PLAIN,VT)		BEEBE, QUEBEC, CANADA	
150039200050	350	RIVERSIDE WATER WORKS, INC.		BEECHER FALLS, VERMONT	05902
150042000130	4500	BELLOW FALLS V. WATER DEPT.		BELLOW FALLS, VERMONT	05101
150044900130	100	BELMONT MOBILE COURT WATER SUP.	ROCKINGHAM	BELLOW FALLS, VERMONT	05101
150050400020	9000	BENNINGTON WATER DEPT.	BURGESS ROAD	BENNINGTON, VERMONT	05201
150053350120	250	BERLIN WATER SUPPLY		BARRE, VERMONT	05641
150059000140	600	BETHEL WATER DISTRICT		BETHEL, VERMONT	05032
150062100050	050	MARSHALL WATER CO (BLOOMFIELD)		NORTH STRATFORD, N.H.	03590
150063050040	180	BOLTON VALLEY SKI AREA WATER SYS		WATERBURY, VERMONT	05676
150070000090	1700	BRADFORD WATER DEPT.		BRADFORD, VERMONT	05033
150075700110	2000	BRANDON FIRE DISTRICT # 1		BRANDON, VERMONT	05733
150078400130	11000	BRATTLEBORO WATER DEPT.		BRATTLEBORO, VERMONT	05301
150084050140	025	BRIDEWATER WOOLEN CO.		BRIDGEWATER, VERMONT	05034
150092400010	1900	BRISTOL WATER DEPT.		BRISTOL, VERMONT	05443
150100800040	65000	BURLINGTON WATER DEPARTMENT	CITY HALL	BURLINGTON, VERMONT	05401
150103600120	225	CABOT WATER DEPARTMENT	CITY HALL	CABOT, VERMONT	05647
150104550080	100	GADY FALLS WATER SUPPLY		MORRISVILLE, VERMONT	05661
150109200080	250	CAMBRIDGE VILLAGE WATER DEPT.	CITY HALL	CAMBRIDGE, VERMONT	05444
150117600050	1000	CANAAN WATER DPEARTMENT	CITY HALL	CANAAN, VERMONT	05903
150120500110	900	CASTLETON FIRE DISTRICT NO. 1		CASTLETON, VERMONT	05735
150123220140	600	CAVENDISH FIRE DISTRICT NO. 2		CAVENDISH, VERMONT	05142
150128800110	260	CENTER RUTLAND WATER DEPT F.D. 1	PRUDENTIAL COMM. FIRE DIST. 1	CENTER RUTLAND, VERMONT	05736
150128850110	030	FLOREY WATER SYSTEM		CENTER RUTLAND, VERMONT	05736
150137200140	1400	CHESTER TOWN WATER DEPT.		CHESTER DEPOT, VERMONT	05144
150145850040	300	COLCHESTER PROPERTIES WATER SUP.		COLCHESTER, VERMONT	05446
150145860040	150	NOURSES SYSTEM-COLCHESTER WATER SUPPLY		COLCHESTER, VERMONT	05446
150145730040	880	COLCHESTER FIRE DISTRICT NO. 3		COLCHESTER, VERMONT	05446
150148400050	060	CONCORD VILLAGE WATER DEPT.	CONCORD COMMUNITY WATER SYSTEMS	CONCORD, VERMONT	05824
150154000100	130	COVENTRY FIRE DISTRICT NO. 1		COVENTRY, VERMONT	05825
150156800100	035	CRAFTSBURY WATER DEPT.		CRAFTSBURY, VERMONT	05826
150159600100	200	CRAFTSBURY COMMON WATER COMPANY	CITY HALL	CRAFTSBURY, VERMONT	05827
150162400110	062	CUTTINGSVILLE WATER DEPT.	CITY HALL	CUTTINGSVILLE, VERMONT	05738
150165200110	1000	DANBY-MT. TABOR FIRE DISTRICT		DANBY, VERMONT	05739
150168000030	600	DANVILLE FIRE DISTRICT NO. 1	TOWN CLERK OFFICE	DANVILLE, VERMONT	05828
150170900100	400	DERBY CENTER WATER DEPT.		DERBY CENTER	05829
150173600100	4000	INTERNATIONAL WATER CO.		DERBY LINE, VERMONT	05830
150176400020	800	DORSET FIRE DISTRICT	CITY HALL	DORSET, VERMONT	05251
150176800120	350	DUXBURY WATER COMPANY	4 PARK AVENUE	WATERBURY, VERMONT	05676
150184840120	050	DEEP ROCK WATER CO.		EAST BARRE, VERMONT	05649
I. D. #	POP.	NAME OF SUPPLY			

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[1] FOR FURTHER INFORMATION CONTACT THE REGIONAL REPRESENTATIVE, BUREAU OF WATER HYGIENE, DHEW REGION I, JOHN F. KENNEDY FEDERAL BUILDING, BOSTON, MASSACHUSETTS 02203. TEL: 617-223-6687

LISTING OF WATER SUPPLIES FROM THE "CWSS"

10000000000 STATE OF VERMONT

I. D. #	POP.	NAME OF SUPPLY			
150184850120	580	EAST BARRE FIRE DISTRICT NO. 1		EAST BARRE, VERMONT	05649
150187600060	170	EAST BERKSHIRE WATER COOP.		EAST BERKSHIRE, VERMONT	05447
150190500090	035	EAST BRAINTREE COOPERATIVE	R.F.D. #2	RANDOLPH, VERMONT	05060
150196000030	125	GOULD WATER SUPPLY		EAST BURKE, VERMONT	05832
150198800120	150	EAST CALAIS WATER DEPARTMENT	CITY HALL	EAST CALAIS, VERMONT	05650
150212800020	120	EAST DORSET WATER DEPT.	CITY HALL	EAST DORSET, VERMONT	05253
150229600030	200	EAST HARDWICK FIRE DISTRICT		EAST HARDWICK, VERMONT	05836
150232400050	023	EAST HAVEN WATER SYSTEM		EAST HAVEN, VERMONT	05837
150232450050	080	ZOFFEY AND TEACHOUT WATER SYSTEM	(AIR FORCE HOUSES ADDITION)	EAST HAVEN, VERMONT	05837
150235200060	050	EAST HIGHGATE WATER DEPT.		EAST HIGHGATE, VERMONT	05449
150240800010	1200	EAST MIDDLEBURY FIRE DIST. NO. 1		EAST MIDDLEBURY, VERMONT	05740
150243850120	300	CRYSTAL SPRINGS WATER CO.		EAST MONTPELIER, VERMONT	05651
150254850030	160	EAST RYEGATE AQUEDUCT CORP.		EAST RYEGATE, VERMONT	05042
150267050080	088	ELMORE COOP WATER SYSTEM		LAKE ELMORE, VERMONT	05657
150271600060	750	ENOSBURG FALLS WATER DEPT.		ENOSBURG FALLS, VERMONT	05450
150274400040	2500	ESSEX CENTER WATER DEPT.	CITY HALL	ESSEX CENTER, VERMONT	05451
150277800040	8000	ESSEX JUNCTION VILLAGE WATER CO.	CITY HALL	ESSEX JUNCTION, VERMONT	05452
150277810040	500	PINEWOOD MANOR WATER WORKS		ESSEX JUNCTION, VERMONT	05452
150277850040	1000	FORT ETHAN ALLEN WATER SYSTEM	2 LINCOLN STREET	ESSEX JUNCTION, VERMONT	05452
150280000060	470	FAIRFAX VILLAGE WATER SUPPLY		FAIRFAX, VERMONT	05454
150285000110	2400	FAIR HAVEN MUNICIPAL WATER SUP.	MUNICIPAL BLDG., N. PARK PLACE	FAIR HAVEN, VERMONT	05743
150288400090	300	FAIRLEE WATER WORKS FIRE DEPT.	CITY HALL	FAIRLEE, VERMONT	05047
150294000110	130	VERMONT MARBLE CO.	FLORENCE WATER SYSTEM	FLORENCE, VERMONT	05765
150299600060	250	FRANKLIN WATER DEPT.	CITY HALL	FRANKLIN, VERMONT	05457
150308050050	400	GILMAN LIGHT AND POWER CO.	GILMAN WATER SUPPLY	GILMAN, VERMONT	05904
150310800100	060	GLOVER VILLAGE WATER DEPT.		GLOVER, VERMONT	05839
150319800070	120	GRAND ISLE WATER SUPPLY CO.		GRAND ISLE, VERMONT	05458
150322800120	1350	GRANITEVILLE FIRE DIST. # 4		GRANITEVILLE, VERMONT	05654
150325000140	022	GREEN'S TRAILER PARK	HIGHWAY 14	SHARON, VERMONT	05065
150327600100	700	GREENSBORO FIRE DISTRICT #1		GREENSBORO, VERMONT	05841
150330450100	064	FLORENCE VALLANCOURT ESTATE	WATER SYSTEM	GREENSBORO BEND, VERMONT	05842
150335050050	100	GUILDHALL WATER SYSTEM		GUILDHALL, VERMONT	05905
150344400030	1521	HARDWICK VILLAGE WATER DEPT.	CITY HALL	HARDWICK, VERMONT	05843
150366800040	500	HINESBURG WATER DEPT.	CITY HALL	HINESBURG, VERMONT	05461
150375200040	125	HUNTINGTON-CENTER WATER CO.		HUNTINGTON CENTER, VERMONT	05401
150378000080	475	HYDE PARK VILLAGE WATER CO.	BOX 39	HYDE PARK, VERMONT	05655
150383600100	200	IRASBURG WATER CO.		IRASBURG, VERMONT	05845
150386450050	1600	BRIGHTON, TOWN WATER SYSTEM	(ISLAND POND SUPPLY)	ISLAND POND, VERMONT	05846
150397600080	500	JEFFERSONVILLE VILLAGE WATER CO.		JEFFERSONVILLE, VERMONT	05464
150397650080	100	MADONNA MOUNTAIN CORP. VILLAGE	SYSTEM WATER SUPPLY	JEFFERSONVILLE, VERMONT	05464
150397660080	499	MADONNA MT. CORP.-LODGE SYSTEM		JEFFERSONVILLE, VERMONT	05464
150400400040	700	JERICHO VILLAGE WATER DEPT.		JERICHO, VERMONT	05465
150400900040	475	JERICHO-UNDERHILL WATER DISTRICT	(UNDERHILL FLATS)	UNDERHILL, VERMONT	05489
150403200080	1000	JOHNSON VIL.WATER + LIGHT DEPT.		JOHNSON, VERMONT	05656
150406000040	125	JONESVILLE WATER SYSTEM	CITY HALL	JONESVILLE, VERMONT	05·66
150411900040	100	LAKE SUNSET TRAILER COURT	(MECHANICSVILLE)	RICHMOND, VERMONT	05477
150431200140	2000	LUDLOW VILLAGE WATER DEPT.	DRAW. B	LUDLOW, VERMONT	05149
150434000050	090	LUNENBURG FIRE DISTRICT NO. 1		LUNENBURG, VERMONT	05906
150442400030	3000	LYNDONVILLE VILLAGE WATER DEPT.	CITY HALL	LYNDONVILLE, VERMONT	05851
150445500040	100	MONGEON WATER WORKS	MALLETS BAY	WINOOSKI, VERMONT	05404

I. D. # POP. NAME OF SUPPLY

LISTING OF WATER SUPPLIES FROM THE "CWSS"

1CC000000000 STATE OF VERMONT

I. D. #	POP.	NAME OF SUPPLY			
150448000020	2500	MANCHESTER WATER COMPANY		MANCHESTER CENTER, VT.	05255
150448050020	499	BIG BROMLEY SKI AREA WATER SUP.		MANCHESTER, VERMONT	05254
150459200120	375	MARSHFIELD VILLAGE WATER DEPT.	CITY HALL	MARSHFIELD, VERMONT	05658
15C459400110	026	MENDON WATER SOCIETY		RUTLAND, VERMONT	05701
15C459450110	078	EAST RIDGE ACRES WATER SUPPLY	MENDON WATER SUPPLY	RUTLAND, VERMONT	05701
150462000010	5500	MIDDLEBURY WATER DEPT.	MUNICIPAL BLDG.	MIDDLEBURY, VERMONT	05753
15C464800120	025	CHURCH STREET WATER SUPPLY		MIDDLESEX, VERMONT	05659
150464810120	025	MIDDLESEX, NON PROFIT WATER SYST		MIDDLESEX, VERMONT	05659
150464850120	025	WESTOVER WATER SUPPLY		MIDDLESEX, VERMONT	05659
150470400040	2000	MILTON WATER SYSTEM		MILTON, VERMONT	05468
15C470450040	200	MILTON MEADOW WATER SUPPLY		MILTON, VERMONT	05468
150470460040	200	CHECKERBERRY PARK TRAILER PARK		MILTON, VERMONT	05468
150470470040	450	BIRCHWOOD MANOR TRAILER PARK		MILTON, VERMONT	05468
150476050060	100	ST. ONGE WATER SYSTEM		MONTGOMERY, VERMONT	05470
15C478800060	090	MONTGOMERY CENTER WATER COMPANY	CITY HALL	MONTGOMERY, VERMONT	05471
15C481600120	9500	MONTPELIER WATER WORKS	CITY HALL	MONTPELIER, VERMONT	05601
150481650120	150	TOWNE HILL WATER CO., INC.		MONTPELIER, VERMONT	05602
150491000080	125	MORRISTOWN CORNERS WATER SUPPLY		MORRISTOWN CORNERS, VERMONT	05661
150492800080	2500	MORRISVILLE LIGHT + WATER CO.	CITY HALL	MORRISVILLE, VERMONT	05661
150504200090	400	NEWBURY VILLAGE LIGHTING DIST.		NEWBURY, VERMONT	05051
150512400100	5019	NEWPORT WATER DEPT.	CITY HALL	NEWPORT, VERMONT	05855
15C515200100	240	NEWPORT CENTER WATER DEPT.	CITY HALL	NEWPORT CENTER, VT.	05857
150518000020	3300	NORTH BENNINGTON WATER DEPT.	CITY HALL	NORTH BENNINGTON, VT.	05257
150532000120	4500	NORTHFIELD WATER DEPT.	CITY HALL	NORTHFIELD, VERMONT	05663
150537650140	250	N. HARTLAND WATER SYSTEMS, INC.		NORTH HARTLAND, VERMONT	05052
150543200080	100	N. HYDE PARK FIRE DISTRICT NO. 1		NORTH HYDE PARK, VERMONT	05665
150546000120	075	N. MONTPELIER WATER SUPPLY		NORTH MONTPELIER, VERMONT	05666
150551600020	100	POWNAL TANNING COMPANY		NORTH POWNAL, VERMONT	05260
150560000090	100	UNION WATER CO. INC.		NORTH THETFORD, VERMONT	05054
15C560010090	025	N. THETFORD VILLAGE WATER CO.		NORTH THETFORD, VERMONT	05054
15C562800100	975	NORTH TROY VILLAGE WATER CO.	CITY HALL	NORTH TROY, VERMONT	05859
150562900130	035	NORTH WESTMINSTER AQUEDUCT ASSN.	70 SAXON RIVER ROAD	BELLOW FALLS, VERMONT	05101
15C562910130	100	NORTH WESTMINSTER WATER COOP.INC		NORTH WESTMINSTER, VERMONT	05101
150568400140	800	NORWICH WATER SUPPLY CO. INC.		NORWICH, VERMONT	05055
150571200100	1800	ORLEANS MUNICIPAL WATER SUPPLY	MEMORIAL SQUARE	ORLEANS, VERMONT	05860
150576850030	125	PASSUMPSIC AQUEDUCT SYSTEM		PASSUMPSIC, VERMONT	05861
150582400030	150	PEACHAM FIRE DISTRICT NO. 1		PEACHAM, VERMONT	35862
150590800110	100	MT. WICOX WATER ASSN.		PITTSFIELD, VERMONT	05762
150593600110	1400	PITTSFORD AQUEDUCT CO.		PITTSFORD, VERMONT	05763
150596400120	840	PLAINFIELD VILLAGE WATER COMPANY	CITY HALL	PLAINFIELD, VERMONT	05667
15C610400110	1750	POULTNEY VILLAGE WATER COMPANY	CITY HALL	POULTNEY, VERMONT	05764
150613200020	600	POWNAL WATER COMPANY	BOX 145	POWNAL, VERMONT	05261
150613550020	015	LAMPMAN WATER SYSTEM	POWNAL CENTER	POWNAL, VERMONT	05261
150616000110	2200	PROCTOR, TOWN, WATER DEPT.	CITY HALL	PROCTOR, VERMONT	35765
150618800140	450	PROCTORSVILLE WATER SYSTEM	(TOWN OF CAVENDISH)	PROCTORSVILLE, VT.	05153
150618950120	060	PUTNAMVILLE WATER CO-OP. INC.		PUTNAMVILLE, VERMONT	05602
150621650130	900	WINDHAM COLLEGE WATER SUPPLY		PUTNEY, VERMONT	05346
15C624450140	300	HARTFORD TOWN WATER DEPT.	QUECHEE WATER SUPPLY	QUECHEE, VERMONT	05059
15C627200090	2200	RANDOLPH WATER DEPT.		RANDOLPH, VERMONT	05060
150630000090	140	RANDOLPH CENTER FIRE DISTRICT		RANDOLPH CENTER, VERMONT	05061
I. D. #	POP.	NAME OF SUPPLY			

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                                        LISTING OF WATER SUPPLIES FROM THE "CWSS"

100000000000    STATE OF VERMONT

 I. D. #      POP.       NAME OF SUPPLY

150630050090   650       VERMONT TECHNICAL COLLEGE WATER SUPPLY                           RANDOLPH CENTER, VERMONT    05061
15C635600020   500       READSBORO VILLAGE WATER SUPPLY                                   READSBORO, VERMONT          05350
15C638400060  1800       RICHFORD VILLAGE WATER SUPPLY                                    RICHFORD, VT.               05476
15C641200040   800       RICHMOND VILLAGE WATER DEPT.                                     RICHMOND, VERMONT           05477
15C649850140   450       ROCHESTER WATER SUPPLY                                           ROCHESTER, VERMONT          05767
150660800110 19500       RUTLAND PUBLIC WATER WORKS       CITY HALL                       RUTLAND, VERMONT            05701
15C660850110   040       PICO VILLA WATER SUPPLY CO.                                      RUTLAND, VERMONT            05701
150666400060  9000       ST. ALBANS WATER DEPT.           100 MAIN ST.                    ST. ALBANS, VERMONT         05478
150669600040   200       SAINT GEORGE VILLA WATER SUPPLY (MAIL BURLINGTON)                SAINT GEORGE, VERMONT       05401
150672000030  7000       ST. JOHNSBURY WATER DEPT.                                        ST. JOHNSBURY, VERMONT      05819
15C674850030   400       MONGEON,LEO. WATER SYSTEM                                        ST.JOHNSBURY CENTER, VT.    05863
150683210130   120       SAXTONS RIVER - BARNES SYSTEM    WATER SUPPLY                    SANTONS RIVER, VERMONT      05154
15C683220130   040       SAXTONS RIVER - CLARK SYSTEM     WATER SUPPLY                    SAXTONS RIVER, VERMONT      05154
150691600040  3200       SHELBURNE WATER DEPARTMENT                                       SHELBURNE, VERMONT          05482
150691750040   040       HARBOR WOOD SHORE WATER SUPPLY                                   SHELBURNE, VERMONT          05483
150694400060   100       SHELDON WATER COOPERATIVE INC.                                   SHELDON, VERMONT            05483
150700050060   300       SHELDON SPRINGS WATER SYSTEM                                     SHELDON SPRINGS, VERMONT    05485
150708450120   100       QUARRY HILL WATER CO. INC.                                       SOUTH BARRE, VERMONT        05670
150708600040   300       SOUTH BURLINGTON FIRE DIST. 1                                    SOUTH BURLINGTON, VT.       05202
150714000070   080       SO. HERO-KEELER BAY WTR. SYSTEM PLANT NO. 1                      SOUTH HERO, VT.             05486
150714100070   180       SOUTH HERO FIRE DISTRICT #1                                      SOUTH HERO, VERMONT         05486
150714200070   100       SOUTH HERO FIRE DISTRICT NO. 2                                   SOUTH HERO, VERMONT         05486
150733600140   637       SOUTH ROYALTON FIRE DISTRICT #1                                  SOUTH ROYALTON, VERMONT     05068
150733650140   075       SOUTH ROYALTON-EATON SYSTEM      WATER SUPPLY                    SOUTH ROYALTON, VERMONT     05068
150736400030   030       SOUTH RYEGATE COOP. SYSTEM                                       SOUTH RYEGATE, VERMONT      05069
150742100100   350       SOUTH TROY WATER SYSTEM          CITY HALL                       SOUTH TROY, VERMONT         05868
150744800110   075       SOUTH WALLINGFORD WATER CO.,INC.                                 SOUTH WALLINGFORD, VERMONT 05771
15C756000140  8000       SPRINGFIELD WATER DEPT.          TOWN OFFICE, 96 MAIN ST.        SPRINGFIELD, VERMONT        05156
150758800010   200       STARKSBORO AQUEDUCT COMPANY                                      STARKSBORO, VERMONT         05487
150764400080   800       STOWE VILLAGE WATER + UTIL.      CITY HALL                       STOWE, VERMONT              05672
150764410080   200       STOWE+LOWER STOWE WATER WORKS                                    STOWE, VERMONT              05672
150770000130  4000       STRATTON CORP. DEVELOPMENT WATERSUPPLY                           STRATTON MOUNTAIN, VERMONT 05155
150772800030   064       SUTTON MUNICIPAL WATER SUPPLY                                    SUTTON, VERMONT             05867
15C775600060  2500       SWANTON VILLAGE WATER COMPANY    CITY HALL                       SWANTON, VERMONT            05488
150781200090   120       THETFORD WATER CO-OP. INC.                                       THETFORD, VERMONT           05074
150790000010  2000       TRI-TOWN WATER DISTRICT NO.1     ADDISON, BRIDPORT, AND SHOREHAM ADDISON, VERMONT            05491
150806400010  2000       VERGENNES WATER COMPANY          CITY HALL                       VERGENNES, VT.              05491
150828800110   800       WALLINGFORD VILLAGE WATER CO.    CITY HALL                       WALLINGFORD, VERMONT        05773
150830000040   050       WARD'S TRAILER PARK              RFD #1                          BOLTON, VERMONT (WATERBURY)05676
15C834450120   499       SUGARBUSH SKI AREA WATER SUPPLY                                  WARREN, VERMONT             05674
150837200090   170       HUNTINGTON WATER SUPPLY(WASHING-TON)                             WASHINGTON, VERMONT         05675
150840000120  1500       WATERBURY MUNICIPAL WATER DEPT. 41 SOUTH MAIN ST.                WATERBURY, VERMONT          05676
15C842850120   500       WATERBURY CENTER WATER WORKS                                     WATERBURY CENTER, VERMONT   05676
150845600080   100       WATERVILLE VILLAGE WATER COOP                                    WATERVILLE, VERMONT         05492
150848400120   460       WEBSTERVILLE FIRE DIST. NO. 3                                    WEBSTERVILLE, VERMONT       05678
15C848450120   065       WELLS LAMSON QUARRY WATER CO.INCBOX 135                          WEBSTERVILLE, VT.           05678
150854000090   450       WELLS RIVER VILLAGE WATER CO.    CITY HALL                       WELLS RIVER, VERMONT        05081
150865200030   075       FAIRBROTHER WATER SYSTEM                                         WEST BURKE, VERMONT         05871
15C865250030   075       WAGNER'S WATER SUPPLY                                            WEST BURKE, VERMONT         05871
15C865280030   040       WEST BURKE WATER CO.                                             WEST BURKE, VERMONT         05871
 I. D. #      POP.       NAME OF SUPPLY
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LISTING OF WATER SUPPLIES FROM THE "CWSS"

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100000000000    STATE OF VERMONT

 I. D. #      POP.        NAME OF SUPPLY

150884800100     100    WESTFIELD VILLAGE WATER SYSTEM  CITY HALL                      WESTFIELD, VERMONT          05874
150898800130     150    WESTMINSTER AQUEDUCT SOCIETY    BOX 57                         WESTMINSTER, VERMONT        05158
150918400110    1950    WEST RUTLAND WATER COMPANY      CITY HALL                      WEST RUTLAND, VERMONT       05777
140929700030     060    WHEELOCK WATER SUPPLY           (MAIL LYNDONVILLE)             WHEELOCK, VERMONT           05851
150935250140    4700    HARTFORD, TOWN WATER DEPT.                                     WHITE RIVER JUNCTION, VT.   95001
150946400090     410    GILBERT & UPPER ROBINSON WATER  SYSTEM                         WILLIAMSTOWN, VERMONT       05679
150946450090     250    LOWER ROBINSON WATER SYSTEM                                    WILLIAMSTOWN, VERMONT       05679
150952000040     135    ONEIDA WATER CORP.                                             WILLISTON, VERMONT          05495
150952030040     400    LAMPLITER ACRE'S WATER SUPPLY                                  WILLISTON, VERMONT          05495
150952040040     200    MEADOWBROOK WATER SUPPLY                                       WILLISTON, VERMONT          05495
150952050040     200    OAK HILL MOBILE HOME WATER SUP.                                WILLISTON, VERMONT          05495
150952060040     120    WILLISTON HILLS WATER CO.                                      WILLISTON, VERMONT          05495
150955600130     650    WILMINGTON WATER DISTRICT                                      WILMINGTON, VERMONT         05363
150957600140    3500    WINDSOR VILLAGE WATER CO.       CITY HALL                      WINDSOR, VERMONT            05089
150957700040    7500    WINOOSKI WATER DEPT.                                           WINOOSKI, VERMONT           05404
150957750040     200    SPAULDING'S WEST SHORE ASSOC.INCWATER SUPPLY, ROUTE NO. 4      WINOOSKI, VERMONT           05404
150966000140    1515    WOODSTOCK AQUEDUCT CO.                                         WOODSTOCK, VERMONT          05091
150968800120     180    MAXHAM WATER SYSTEM             HIGHWAY 12                     WORRCESTER, VERMONT         05682
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FOR FURTHER INFORMATION CONTACT THE REGIONAL REPRESENTATIVE, BUREAU OF WATER HYGIENE,
DHEW REGION I, JOHN F. KENNEDY FEDERAL BLDG., BOSTON, MASS. 02203. TEL: 617-223-6687.

LISTING OF WATER SUPPLIES FROM THE "CWSS"

200000000000 SMSA -- NEW YORK, NEW YORK[2]

I. D. #	POP.	NAME OF SUPPLY			
235006700300	13100	ALBERTSON WATER DISTRICT		ROSLYN HEIGHTS, NEW YORK	11577
235017050520	3000	AMAGANSETT WATER COMPANY	MAIN STREET	AMAGANSETT, NEW YORK	11930
235017500600	320	AMAWALK HEIGHTS WATER DIST.	(TOWN OF SOMERS, YORKTOWN)	AMAWALK, NEW YORK	10501
235017600600	500	AMAWALK-SHENOROCK WATER DIST.	NO. 1 - SHENOROCK SUPPLY	SHENOROCK, NEW YORK	10587
235031550600	1370	WINDMILL FARM W. WKS. CORP.	P.O. BOX 282 (ARMONK)	PORTCHESTER, NEW YORK	10573
235054000300	5800	BAYVILLE VILLAGE WATER DEPT.		BAYVILLE, NEW YORK	11709
235058900600	6000	BEDFORD TOWN WATER DISTRICTS	88 BEDFORD RD.	KATONAH, NEW YORK	10536
235058950600	375	BEDFORD FARMS WATER COMPANY		BEDFORD, NEW YORK	10506
235059070600	063	ROOSEVELT DRIVE WATER ASSOC.		BEDFORD HILLS, N. YORK	10507
235059080600	600	WESTFIELD STATE FARM	247 HARRIS ROAD	BEDFORD HILLS, NEW YORK	10507
235067000300	32000	BETHPAGE WATER DISTRICT		BETHPAGE,LONG ISLAND,N.Y.	11714
235073100440	300	ST. DOMINIC'S HOME		BLAUVENT, NEW YORK	10913
235077400440	033	BLUE BIRD (PIDGEON) TRAILER PARK	THIEL MT. IVY ROAD	POMONA, NEW YORK	10970
235078050520	150	BLUE POINT COMMUNITY ASSOC.	BLUE POINT WATER SUPPLY	BLUE POINT, NEW YORK	11715
235091700520	24000	BRENTWOOD WATER DISTRICT	51 THIRD AVE.	BRENTWOOD, NEW YORK	11717
235093000600	7800	BRIARCLIFF MANOR VIL. WATER DEPT		BRIARCLIFF MANOR, N.Y.	10510
235093550520	1600	BRIDGEHAMPTON WATER COMPANY	MAIN STREET	BRIDGEHAMPTON, NEW YORK	11932
235102000600	2168	BUCHANAN VILLAGE WATER SUPPLY		BUCHANAN, NEW YORK	10511
235111550520	180	BAITING HOLLOW LODGE		CALVERTON, NEW YORK	11933
235115090440	225	CAMP ADDISONE BOYCE		TOMKINS COVE, NEW YORK	10986
235115100440	300	CAMP BULLOWA WATER SUPPLY		STONEY POINT, NEW YORK	10980
235115150440	300	CAMP LOW ACRES WATER SUPPLY	175 W. CLARKSTOWN RD.	SPRING VALLEY, N.Y.	10977
235115190440	100	CAMP RAMAQUOIS WATER SUPPLY		POMONA, NEW YORK	10970
235115200600	1600	CAMP SMITH - NATIONAL GUARD		PEEKSKILL, NEW YORK	10566
235115850440	192	CAMP WILLIAMS	ROUTE 306	SUFFERN, NEW YORK	10901
235121500300	10842	CARLE PLACE WATER DISTRICT	578 MINEOLA AVE. (N. HEMPSTEAD)	CARLE PLACE, NEW YORK	11514
235136050520	9100	CENTRAL ISLIP STATE HOSPITAL	WATER SYSTEM	CENTRAL ISLIP, NEW YORK	11722
235140100600	800	NEW CASTLE WATER CO.		CHAPPAQUA, NEW YORK	10514
235148000520	1000	CHERRY GROVE WATER DISTRICT	(RURAL BRANCH OF SAYVILLE P.O.)	CHERRY GROVE, NEW YORK	11782
235156100300	32000	CITIZENS WATER CO. OF NEWTOWN	556 MIDDLENECK RD.	GREAT NECK, NEW YORK	11023
235158350440	050	CLARK TRAILER PARK	MT. IVY	POMONA, NEW YORK	10970
235184100600	2200	CONTINENTAL VILLAGE WATER DIST.	(TOWN OF PHILLIPSTOWN) RT. 3	PEEKSKILL, NEW YORK	10566
235188550520	820	EASTERN SUFFOLK WATER CO.	4910 SUNRISE HWY. (CORAM SUPPLY)	PATCHOGUE, NEW YORK	11772
235194050600	185	CORTLAND TOWN WATER DIST. 1	6 PUTNAM PARK ROAD	PEEKSKILL, NEW YORK	10566
235194250600	16500	CORTLANDT TOWN WATER DISTRICTS		CORTLANDT (T), NEW YORK	10520
235201600600	200	CROTON FALLS WATER DISTRICT	(SALEM CENTER), TOWN OF N. SALEM	PURDY STATION, NEW YORK	10578
235202000600	8000	CROTON-ON-HUDSON CITY WATER WKS.	CITY HALL	CROTON, NEW YORK	10520
235210600520	4000	DAVIS PARK WATER WORKS CO., INC.	(RURAL BR. PATCHOGUE P.O.)	DAVIS PARK, NEW YORK	11723
235224750520	14000	DIX HILLS WATER DISTRICT	TOWN HALL	HUNTINGTON, NEW YORK	11743
235230600520	400	DUNEWOOD WATER DEPT.		DUNEWOOD, FIRE IS.,NEW YORK	11734
235239600520	3850	EAST FARMINGDALE WATER DISTRICT	1919 RT. 110	FARMINGDALE, NEW YORK	11735
235243800300	49400	EAST MEADOW WATER DISTRICT	1995 PROSPECT AVE. (HEMPSTEAD)	EAST MEADOW, NEW YORK	11554
235247800520	1400	SWAN LAKE WATER CO.	EAST PATCHOGUE WATER SUPPLY	EAST PATCHOGUE, N.Y.	11772
235249550520	1000	COMMUNITY WATER CORP.	EAST QUOGUE WATER SUPPLY	EAST QUOGUE, NEW YORK	11942
235267000600	5200	ELMSFORD(V) MUNICIPAL WATER SUP.		ELMSFORD, NEW YORK	10523
235273500520	1200	FAIR HARBOR WATER DISTRICT	FIRE ISLAND	FAIR HARBOR, NEW YORK	11734
235277000300[3]	8000	FARMINGDALE CITY WATER WORKS	CITY HALL	FARMINGDALE, NEW YORK	11735
235277100520	5000	STATE UNIV. AGR. & TECH. INST.		FARMINGDALE, NEW YORK	11735
235284500520	2500	FIRE ISLAND PINES WATER DISTRICT	(BR. SAYVILLE P.O.)	FIRE ISLAND PINES, N.Y.	11782
235284750520	200	DUNE REALTY CORP. (FIRE ISLAND	SUMMER CLUB)	FIRE ISLAND,OCEAN BEACH,NY	11770

I. D. # POP. NAME OF SUPPLY

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[2] FOR FURTHER INFORMATION CONTACT THE REGIONAL REPRESENTATIVE, BUREAU OF WATER HYGIENE, DHEW REGION II, FEDERAL BLDG., 26 FEDERAL PLAZA, NEW YORK, N.Y. 10007. TEL: 212-264-2523.

LISTING OF WATER SUPPLIES FROM THE "CWSS"

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200000000000    SMSA -- NEW YORK, NEW YORK

 I. D. #      POP.      NAME OF SUPPLY

235285500520     500    FISHERS ISLAND WATER COMPANY     SOUTH HOLD TOWN                          FISHERS ISLAND, NEW YORK   06390
235300100300   20000    FRANKLIN SQUARE WATER DISTRICT  895 SCHROETER AVE.                       FRANKLIN SQUARE, L.I., N.Y.11010
235303000300   41000    FREEPORT VILLAGE WATER DEPT.                                              FREEPORT, NEW YORK         11520
235309950300   24000    GARDEN CITY PARK WATER DISTRICT 333 MARCUS AVE.                          GARDEN CITY PARK, N.Y.     11040
235310100300   24000    GARDEN CITY MUNICIPAL WTR. WORKS351 STEWART AVENUE                       GARDEN CITY, NEW YORK      11530
235310940440     600    GARNERVILLE HOLDING CORP.           RAILROAD AVE.                        GARNERVILLE, NEW YORK      10923
235310950440     025    KELLER'S APARTMENTS                                                       GARNERVILLE, NEW YORK      10923
235311800440     040    WEXLER BUNGALOWS, ROCKLAND MOTEL                                          GARNERVILLE, NEW YORK      10923
235321000300   27000    GLEN COVE WATER DEPT.                                                     GLEN COVE, NEW YORK        11542
235321050300     500    GLEN COVE COMMUNITY HOSPITAL                                              GLEN COVE, NEW YORK        11542
235328050600     340    LAKE KATONAH CLUB                                                         GOLDENS BRIDGE, NEW YORK   10526
235328100600     600    GOLDENS BRIDGE COMMUNITY ASSOC. WATER SUPPLY, BOX 216                    GOLDENS BRIDGE, NEW YORK   10526
235336900600   45000    GREENBURGH MUNICIPAL WATER WORKS(UNINCORPORATED AREA)                    SCARDALE, NEW YORK         10583
235339100520   29000    GREENLAWN WATER DISTRICT                                                  GREENLAWN, NEW YORK        11740
235339500520    5700    GREENPORT VILLAGE WATER DEPT.   18 SOUTH ST.                             GREENPORT, N.Y.            11944
235356600520    4000    HAMPTON BAYS WATER DISTRICT                                               HAMPTON BAYS, NEW YORK     11946
235363210600    6000    HARRISON TOWN WATER DIST. NO. 1 226 HARRISON AVE.                        HARRISON, N. Y.            10528
235368520440     200    BIRCHWOOD BUNGALOW COLONY                                                 HAVERSTRAW, NEW YORK       10927
235372500300   40000    HEMPSTEAD MUNICIPAL WATER SUPPLY320 CLINTON STREET                       HEMPSTEAD, L.I., NEW YORK  11550
235378000300   59800    HICKSVILLE WATER DISTRICT       85 BETHPAGE RD.                          HICKSVILLE, NEW YORK       11801
235382000440    1000    HILLBURN WATER SUPPLY           37 5TH STREET                            HILLBURN, NEW YORK         10931
235405550520    1120    BEVON WATER CORP.               BOX 512                                  HUNTINGTON, L.I.,NEW YORK  11743
235405560520    1200    WOODBURY TRIANGLE INC.          (COLD SPRING HILLS WATER SUPPLY,HUNTINGTON, NEW YORK          11743
235413500600    5800    IRVINGTON WATER WORKS                                                     IRVINGTON, NEW YORK        10533
235417100410  650000    JAMAICA WATER SUPPLY COMPANY    NASSAU SUPPLY, 161-20 89TH AVE. JAMICA, NEW YORK                11431
235422600300   60000    JERICHO WATER DISTRICT          125 CONVENT RD.                          SYOSSET, NEW YORK          11791
235439050520    9425    KINGS PARK STATE HOSPITAL                                                 KINGS PARK, L.I., NEW YORK 17754
235441000520     500    KISMET WATER CORP.              (RURAL BR. OF BAYSHORE P.O.)             KISMET, NEW YORK           11706
235449020520     150    CEDAR GROVE CIVIC ASSOC.                                                  LAKE GROVE, NEW YORK (L.I.)11755
235449050520    2100    PARSNIP POND WATER CO.          LAKE GROVE WATER SUP.,260 N.BLVDGREAT NECK, L.I., NEW YORK      11021
235455050520     600    RONKONKAMA WATER CO., INC.      ST. JOSEPH AVE.                          LAKE RONKONKOMA, L.I., N.Y.11779
235458000600    6860    LARCHMONT VILLAGE WATER DEPT.                                             LARCHMONT, NEW YORK        10538
235466300300   48400    LEVITTOWN WATER DISTRICT        HEMPSTEAD(T)                             LEVITTOWN, NEW YORK        11756
235468700300    6500    LIDO-POINT LOOKOUT WATER DIST.                                            POINT LOOKOUT, NEW YORK    11569
235481100300    7000    LOCUST VALLEY WATER DIST.                                                 LOCUST VALLEY, NEW YORK    11560
235482000300   90000    LONG BEACH CITY WATER DEPT.     CITY HALL                                LONG BEACH, NEW YORK       11561
235483100300  259000    LONG ISLAND WATER CORPORATION   733 SUNRISE HIGHWAY                      LYNBROOK, NEW YORK         11563
235501600300   42700    MANHASSET-LAKEVILLE WATER DIST. 176 E. SHORE RD.                         MANHASSET, L.I., NEW YORK  11030
235514750300   50000    MASSAPEQUA WATER DISTRICT       84 GRAND AVE.                            MASSAPEQUA, NEW YORK       11758
235515050520     400    CAPTAIN KIDD WATER CO.          MATTITUCK WATER SUPPLY, BOX A-21WANTAGH, NEW YORK               11793
235516900440     085    MAZZA AND LEONE TRAILER PARK    (POMONA POST OFFICE)                     MT. IVY, NEW YORK          10970
235520300520    2540    SUFFOLK STATE SCHOOL WATER SPL. BOX 788                                  MELVILLE, NEW YORK         11746
235532050520     500    GROVELAND PARK ASSOC.           HARRISON AVE.                            MILLER PLACE, L.I., N.Y.   11764
235533600300     240    MILL NECK ESTATES WATER CO.                                               MILL NECK, NEW YORK        11765
235535500300   22052    MINEOLA VILLAGE WATER DEPT.     ELM STREET                               MINEOLA VILLAGE, L.I., N.Y.11501
235535600300   16000    MITCHELL FIELD WATER SUPPLY     200 COUNTY SEAT RD.                      MINEOLA, NEW YORK          11501
235542800520    3500    MONTAUK WATER SUPPLY            MONTAUK HIGHWAY                          MONTAUK, NEW YORK          11954
235545050600    3000    MONTROSE IMPROVEMENT DISTRICT                                             MONTROSE, NEW YORK         10548
235553200600     650    MOUNTAIN LAKES CAMP WATER SUPPLY                                          NORTH SALEM, NEW YORK      10560
235554400440     550    MT. IVY TRAILER PARK            A. SECTION - SOUTH OF RT. 202            MT. IVY, POMONA, N.Y.      10970
 I. D. #      POP.      NAME OF SUPPLY
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LISTING OF WATER SUPPLIES FROM THE "CWSS"

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235554500600	7000	MT. KISCO WATER DEPT.	104 E. MAIN STREET	MT. KISCO, NEW YORK	10549
235556660600	5000	HAWTHORNE IMPROVEMENT DISTRICT	(N. TARRYTOWN P.O.)	TOWN OF MT. PLEASANT, N.U.	10591
235557050520	080	CRYSTAL BROOK PARK ASSOC.	BOX 57	MT. SINAI, L.I., NEW YORK	11766
235558500600	78000	MT. VERNON MUNICIPAL WATER DEPT.		MT. VERNON, NEW YORK	10550
235561600440	600	ST. AGATHA'S HOME		NANUET, NEW YORK	10954
235570250600	18000	NEW CASTLE TOWN WATER DIST.1	410 KING STREET	CHAPPAQUA, NEW YORK	10514
235570520440	125	CAMP JAWONIA		NEW CITY, NEW YORK	10956
235570540440	160	LAKE LUCILLE PROPERTY OWNERS ASC		LAKE LUCILLE, NEW CITY,N.Y.	10956
235578600600	135000	NEW ROCHELLE WATER CO.-N.R. DIV.	415 HUGUENOT ST.	NEW ROCHELLE, NEW YORK	10802
235578650600	33000	NEW ROCHELLE WATER CO.-POCANTICO	DIVISION	NEW ROCHELLE, NEW YORK	10802
235582500310	8100000	NEW YORK C.DEPT.WATER RESOURCES	MUNICIPAL BLDG.	NEW YORK, NEW YORK	10007
235582550410	125000	WOODHAVEN-UTIL. + IND. CORP.	9002 91ST. STREET	NEW YORK, NEW YORK	11421
235582750300	165000	N.Y. WATER SERVICE CORP.-MERRICK	DIVISION, 11 SMITH STREET	MERRICK, N. Y.	11566
235591710600	2000	NORTH CASTLE WATER DISTRICT NO.1	188 VIRGINIA RD.	NORTH WHITE PLAINS, N.Y.	10603
235601060600	185	PABST WATER WORKS, INC.		NORTH SALEM, NEW YORK	10560
235601240600	108	SALEM ACRES ASSOCIATION		TOWN OF NORTH SALEM, N.Y.	10560
235602200600	8818	NORTH TARRYTOWN VILLAGE WATER	SUPPLY	NORTH TARRYTOWN, NEW YORK	10591
235606500440	15000	NYACK WATER DEPT.		NYACK, NEW YORK	10960
235609700520	4000	OCEAN BAY PARK WATER CO.		OCEAN BAY PARK, F.TS., N.Y.	11775
235610000520	12000	OCEAN BEACH WATER CO.	FIRE ISLAND	OCEAN BEACH, NEW YORK	11770
235613750300	2500	OLD WESTBURY WATER DISTRICT	OLD WESTBURY RD.	OLD WESTBURY, L.I., N.Y.	11568
235620550440	048	BELL AND COMPANY	GREENBUSH ROAD	ORANGEBURG, NEW YORK	10962
235620600440	5300	ROCKLAND STATE HOSPITAL		ORANGEBURG, NEW YORK	10962
235624500600	25900	OSSINING VILLAGE WATER DEPT.		OSSINING, NEW YORK	10562
235632050300	200	STATE UNIVERSITY OF NEW YORK	WATER SUPPLY, P.O. BOX 58	OYSTER BAY, L.I., NEW YORK	11771
235632100300	9025	OYSTER BAY WATER DISTRICT	MUNICIPAL BLDG.	OYSTER BAY, NEW YORK	11771
235632250300	070	SEL-BRA ACRES ASSOCIATION	OYSTER BAY COVE	COVE NECK, NEW YORK	11771
235638580440	250	PARKWAY BEACH CLUB TRAILER CAMP	MT. IVY, RT. 202	POMONA, NEW YORK	10970
235644000600	20000	PEEKSKILL CITY WATER DEPT.		PEEKSKILL, NEW YORK	10566
235644100600	2000	PELHAM VILLAGE WATER DEPT.		PELHAM, NEW YORK	10803
235660400300	40000	PLAINVIEW WATER DISTRICT	10 MANETTO HILL	PLAINVIEW, NEW YORK	11803
235660700300	1500	PLANDOME WATER WORKS	MUNICIPAL BLDG.	PLANDOME, MANHASSET, N.Y.	11030
235662500600	7000	PLEASANTVILLE WATER DEPT.	CITY HALL	PLEASANTVILLE, NEW YORK	10570
235662600600	188	USONIA HOMES-A COOPERATIVE INC.		PLEASANTVILLE, NEW YORK	10570
235663700600	200	GREENROCK CORP.		POCANTICO HILLS, NEW YORK	10591
235665550520	900	POINT O'WOODS ASSOCIATION	WATER SUPPLY (R.BR.BAYSHORE P.O)	POINT O'WOODS, NEW YORK	11775
235670500600	45300	PORT CHESTER WATER WORKS INC.		PORT CHESTER, N.Y.	10573
235674100520	180	WEST MEADOW BEACH ASSOC.		PORT JEFFERSON, NEW YORK	11777
235678000300	32000	PORT WASHINGTON WATER DEPT.		PORT WASHINGTON, L.I., N.Y.	11050
235709550520	450	REEVES BEACH PARK ASSOCIATION		RIVERHEAD, NEW YORK	11901
235709560520	140	THURMS MOBILE HOME ESTATES	FRESH POND AVE., BAITING HOLLOW	RIVERHEAD, NEW YORK	11901
235709570520	320	WILDWOOD LAKE WATER COMPANY		RIVERHEAD, L.I., NEW YORK	11901
235709600520	7215	RIVERHEAD WATER DISTRICT	1035 PULASKI STREET	RIVERHEAD, NEW YORK	11901
235709900520	1200	RIVERSIDE WATER DISTRICT	RIVERLEIGH AVE.	RIVERHEAD, NEW YORK	11901
235713550440	100	FLORIDIAN COTTAGES		VALLEY COTTAGE, NEW YORK	10989
235716000300	27000	ROCKVILLE CENTER DEPT. WATER	SUPPLY	ROCKVILLE CENTER, NEW YORK	11570
235716520520	075	CULROSS WATER CORP.	ROCKY POINT WATER SUPPLY	ROCKY POINT, NEW YORK	11778
235716550520	1400	GREAT BEACH WATER CO.	RT. 25 A	ROCKY POINT, NEW YORK	11778
235716600520	2800	NORTH SHORE WATER CO.	BOX 128	ROCKY POINT, NEW YORK	11778
235716650520	360	TERRACES ON THE SOUND	ROCKY POINT WATER SUPPLY	ROCKY POINT, L.I., N.Y.	11778
I. D. #	POP.	NAME OF SUPPLY			

LISTING OF WATER SUPPLIES FROM THE "CWSS"

200000000000 SMSA -- NEW YORK, NEW YORK

I. D. #	POP.	NAME OF SUPPLY			
235717850520	155	ROLL IN MOBILE HOME	RT. 25	CALVERTON, NEW YORK	11933
235718550520	100	OAK WOOD DEVELOPMENT WATER SYST.		RONKONKOMA, NEW YORK	11779
235719700300	060	ROOSEVELT FIELD WATER DISTRICT		WESTBURY, NEW YORK	11590
235724600300	23000	ROSLYN WATER DISTRICT	24 WEST SHORE RD.	ROSLYN, NEW YORK	11576
235733900300	400	SAGAMORE HILL, NATL. HISTORIC	SITE, WATER SUPPLY BOX 304	OYSTER BAY, L.I., N.Y.	11771
235736250520	6200	ST. JAMES WATER DISTRICT		ST. JAMES, L.I., NEW YORK	11780
235741550520	1000	SALTAIRE WATER DISTRICT	FIRE ISLAND, R.BR. BAYSHORE P.O.	SALTAIRE, NEW YORK	11706
235744800300	3500	SANDS POINT WATER WORKS	CITY HALL	PORT WASHINGTON, N.Y.	11050
235752500600	22000	SCARDALE WATER SUPPLY	VILLAGE HALL, WHITE PLNS. POST RD.	SCARSDALE, NEW YORK	10583
235760100300	14000	SEA CLIFF WATER CO.	325 PROSPECT AVE.	SEA CLIFF, NEW YORK	11579
235761110520	1500	SEAVIEW UTILITIES		SEAVIEW, FIRE IS., NEW YORK	11770
235761550520	2100	SELDON WATER CO., INC.	393 WILLIS AVE.	ROSLYN HEIGHTS, NEW YORK	11577
235761600520	3200	SUNHILL WATER CORP.	SELDON WATER SUPPLY	SELDON, NEW YORK	11784
235768900520	150	DEERING HARBOR VILLAGE		SHELTER ISLAND, NEW YORK	11964
235768500520	500	SHELTER ISLAND HEIGHTS ASSOC.		SHELTER ISLAND, NEW YORK	11964
235772300520	600	SHIRLEY WATER WORKS CO.		SHIRLEY, NEW YORK	11967
235773050520	2600	SHOREWOOD WATER CORP.	1534 MAIN ST. (DIST.-SHOREHAM)	PORT JEFFERSON, NEW YORK	11777
235781550440	3000	POTHAT WATER CO.	SLOATSBURG WATER SUPPLY	SLOATSBURG, NEW YORK	10974
235781600440	115	SISTER SERVANTS-MARY IMMACULATE		SLOATSBURG, NEW YORK	10974
235784200520	35000	SMITHTOWN WATER DISTRICT	61 EAST MAIN ST.	KINGS PARK, NEW YORK	11754
235789550520	125	COLONY BEACH FRONT ASSOCIATION		SOUTHAMPTON, L.I., NEW YORK	11968
235794800300	49000	SOUTH FARMINGDALE WATER DISTRICT	LANGDON RD.	SOUTH FARMINGDALE, NEW YORK	11735
235796700520	50000	SOUTH HUNTINGTON WATER DISTRICT	WEST 13TH ST. AND 5TH AVE.	HUNTINGTON STATION, N.Y.	11746
235802100600	300	TWIN LAKES WATER WORKS- S. SALEM		SOUTH SALEM, NEW YORK	10590
235805200440	250	ST. AGNES HOME FOR BOYS		SPARKILL, NEW YORK	10976
235811080440	100	SIMON'S BUNGALOWS		SPRING VALLEY, NEW YORK	10977
235811100440	170000	SPRING VALLEY WATER CO., INC.	147 NORTH MAIN STREET	SPRING VALLEY, NEW YORK	10977
235824100520	206	SOUND VIEW ASSOC. INC.	MT. GREY RD.	STONY BROOK, NEW YORK	11790
235824250520	4000	STONY BROOK WATER DISTRICT		STONY BROOK, NEW YORK	11790
235825100440	200	MT. VIEW TRAILER PARK		STONY POINT, NEW YORK	10980
235829500440	7000	SUFFERN MUNICIPAL WATER WORKS	CITY HALL	SUFFERN, NEW YORK	10901
235829550440	050	TAGASTE SEMINARY		SUFFERN, NEW YORK	10901
235829650520	34500	SCWA-AMITYVILLE SERVICE AREA	SUFFOLK COUNTY WATER AUTHORITY	OAKDALE, NEW YORK	11769
235829660520	124000	SCWA-BABYLON SERVICE AREA	SUFFOLK COUNTY WATER AUTHORITY	OAKDALE, NEW YORK	11769
235829670520	144000	SCWA-BAYSHORE SERVICE AREA	SUFFOLK COUNTY WATER AUTHORITY	OAKDALE, NEW YORK	11769
235829680520	8660	SCWA-EAST HAMPTON SERVICE AREA	SUFFOLK COUNTY WATER AUTHORITY	OAKDALE, NEW YORK	11769
235829690520	47500	SCWA-HUNTINGTON SERVICE AREA	SUFFOLK COUNTY WATER AUTHORITY	OAKDALE, NEW YORK	11769
235829700520	46300	SCWA-NORTHPORT SERVICE AREA	SUFFOLK COUNTY WATER AUTHORITY	OAKDALE, NEW YORK	11769
235829710520	81500	SCWA-PATCHOGUE SERVICE AREA	SUFFOLK COUNTY WATER AUTHORITY	OAKDALE, NEW YORK	11769
235829720520	59400	SCWA-PORT JEFFERSON SERVICE AREA	SUFFOLK COUNTY WATER AUTHORITY	OAKDALE, NEW YORK	11769
235829730520	3170	SCWA-SAG HARBOR SERVICE AREA	SUFFOLK COUNTY WATER AUTHORITY	OAKDALE, NEW YORK	11769
235829740520	53600	SCWA-SMITHTOWN-KING PK.SER.AREA	SUFFOLK COUNTY WATER AUTHORITY	OAKDALE, NEW YORK	11769
235829750520	7600	SCWA-SOUTHAMPTON SERVICE AREA	SUFFOLK COUNTY WATER AUTHORITY	OAKDALE, NEW YORK	11769
235829760520	8650	SCWA-WESTHAMPTON SERVICE AREA	SUFFOLK COUNTY WATER AUTHORITY	OAKDALE, NEW YORK	11769
235832350600	190	SUNSET RIDGE WATER DISTRICT		TOWN OF NORTH SALEM, N.Y.	10560
235839000600	12000	TARRYTOWN MUNICIPAL WATER SUPPLY	21 WILDEY ST.	TARRYTOWN, NEW YORK	10591
235842550440	4600	LETCHWORTH VILLAGE		THIELLS, NEW YORK	10984
235844750600	5000	THORNWOOD WATER DISTRICT	(TOWN OF MT. PLEASANT)P.O.BOX205	THORNWOOD, N.Y.	10594
235854150600	400	TRUESDALE CORPORATION	TRUESDALE LAKE WATER SUPPLY	TRUESDALE LAKE, NEW YORK	10590
235862400300	25000	UNIONDALE WATER DISTRICT		UNIONDALE, NEW YORK	11553
I. D. #	POP.	NAME OF SUPPLY			

LISTING OF WATER SUPPLIES FROM THE "CWSS"

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20C000000000     SMSA -- NEW YORK, NEW YORK

 I. D. #      POP.        NAME OF SUPPLY

235869800600     8000     VALHALLA WATER DIST.-MT.PLEASANT271 COLUMBUS AVE.                  VALHALLA, NEW YORK          10595
235870050440      030     LOCKE WATER COMPANY                                                VALLEY COTTAGE, NEW YORK    10989
235870100440      120     JOY ACRES INC.                                                     VALLEY COTTAGE, NEW YORK    10989
235870150440      150     TOLSTOY FOUNDATION              LAKE ROAD                          VALLEY COTTAGE, NEW YORK    10989
235882550520      060     HEROD POINT ESTATES             HEROD LANE                         WADING RIVER,L.I.,NEW YORK  11792
235882800520      240     RAMBLEWOOD TRAILER PARK         BOX 117, SOUND AVE.                WADING RIVER, NEW YORK      11792
235882630520      400     SOUND SHORE CLUB, INC.          N. WADING RIVER ROAD               WADING RIVER, NEW YORK      11792
235882650520      200     WADING RIVER WATER WORKS        BOX 185                            WADING RIVER, NEW YORK      11792
235906750520    14000     PILGRIM STATE HOSPITAL                                             WEST BRENTWOOD, NEW YORK    11717
235908100300    24000     WESTBURY WATER DISTRICT         160 DREXEL AVE.                    WESTBURY, NEW YORK          11590
235909150030    60000     WESTCHESTER JOINT WATER WORKS   (MAMARONECK)                       MAMARONECK, NEW YORK        10543
235909400600     3500     WESTCHESTER COUNTY DEPT. OF     PUBLIC WORKS-(GRASSLANDS)          VALHALLA, NEW YORK          10595
235916800520      300     WEST GILGO BEACH ASSOCIATION                                       W.GILGO BEACH,FIRE IS.,N.Y.11702
235919050440      500     N.Y. STATE REHAB. HOSPITAL                                         WEST HAVERSTRAW, NEW YORK   10993
235919200300    28000     HEMPSTEAD GARDEN WATER DISTRICT                                    WEST HEMPSTEAD, N.Y.        11552
235920080520      060     WEST ISLAND HOMEOWNER'S ASSOC.                                     WEST ISLAND, FIRE IS., N.Y.11752
235934250600      500     WHITEHALL CORNERS WATER SUPPLY  LINCOLN HALL SCHOOL                KATONAH, NEW YORK           10536
235935000600    55000     WHITE PLAINS MUNICIPAL WATER    SUPPLY, 279 HAMILTON AVE.          WHITE PLAINS, NEW YORK      10601
235939200300     9000     WILLISTON PARK WATER DEPT.      494 WILLIS AVE                     WILLISTON PARK, N.Y.        11596
235954500600   215000     YONKERS CITY BUREAU OF WATER    CITY HALL                          YONKERS, NEW YORK           10701
235956150600    28000     YORKTOWN WATER S & D DISTRICT                                      SHRUB OAK, NEW YORK         10588
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FOR FURTHER INFORMATION CONTACT THE REGIONAL REPRESENTATIVE, BUREAU OF WATER HYGIENE,
DHEW REGION II, FEDERAL BLDG., 26 FEDERAL PLAZA, NEW YORK, N.Y. 10007. TEL; 212-264-2523.

LISTING OF WATER SUPPLIES FROM THE "CWSS"

355000000000 SMSA -- CHARLESTON, WEST VIRGINIA[3]

I. D. #	POP.	NAME OF SUPPLY			
355003050200	120	ACME WATER SUPPLY		LEEWOOD, WEST VIRGINIA	25122
355062450200	8700	W. VA. WATER CO.-BELLE DIV.		BELLE, WEST VIRGINIA	25015
355118850200	100	IMPERIAL CALLIERY CO.	BURNWELL WATER SUPPLY	BURNWELL, WEST VIRGINIA	25034
355131400200	130	CARBON FUEL COMPANY	CARBON WATER SUPPLY	CARBON, WEST VIRGINIA	25037
355140400200	1750	CEDAR GROVE MUNICIPAL WATER CO.	CITY HALL BLDG.	CEDAR GROVE, WEST VIRGINIA	25039
355145800200	121000	W. VA. WATER CO.-CHARLESTON DIV.		CHARLESTON, WEST VIRGINIA	25301
355149450200	2100	COMMUNITY WATER CO.		CHELYAN, WEST VIRGINIA	25041
355160800200	3500	CLENDENIN MUNICIPAL WATER SUPPLY	CITY HALL BLDG.	CLENDENIN, WEST VIRGINIA	25045
355184250200	036	CONSOLIDATED GAS SUPPLY CORP.		CORTON, WEST VIRGINIA	25050
355197450200	250	RIVERTON COAL CO.-CROWN HILL		CROWN HILL, WEST VIRGINIA	25052
355213600200	320	CARBON FUEL CO. (DECOTA)		DECOTA, WEST VIRGINIA	25055
355235800200	1200	EASTBANK WATER SERVICE		EASTBANK, WEST VIRGINIA	25067
355315600200	1000	GLASGOW WATER SERVICE		GLASGOW, WEST VIRGINIA	25086
355348010200	1000	HANDLEY- C. & O. RR WATER SYSTEM		HANDLEY, WEST VIRGINIA	25102
355423010200	100	BETHLEHEM MINES CORP.(KAYFORD)		KAYFORD, WEST VIRGINIA	25116
355462050200	150	LEEWOOD WATER SUPPLY CO.		LEEWOOD,WEST VIRGINIA	25122
355475400200	2000	LINCOLN PUBLIC SERVICE DISTRICT		ALUM CREEK, WEST VIRGINIA	25003
355537850200	1100	UNITED WATER SERVICE CO.		MIAMI, WEST VIRGINIA	25134
355554500100	6500	W.VA. WATER CO.-MONTGOMERY DIV.		MONTGOMERY, WEST VIRGINIA	25136
355589200200	52000	W.VA. WATER CO.-NITRO DIV.		NITRO, WEST VIRGINIA	25143
355640000200	1025	PINCH PUBLIC SERVICE DISTRICT		PINCH, WEST VIRGINIA	25156
355655800200	1500	PRATT WATER WORKS COMPANY	CITY HALL	PRATT, WEST VIRGINIA	25162
355687650200	100	AMHERST COAL COMPANY (RENSFORD)		RENSFORD, WEST VIRGINIA	25300
355688300200	090	CARBON FUEL CO. (REPUBLIC)		REPUBLIC, WEST VIRGINIA	25037
355711650200	256	RIVERVIEW DEVELOPMENT CO.-RONDA		SHARON, WEST VIRGINIA	25182
355720600200	20000	ST.ALBANS MUNICIPAL WATER SUPPLY		ST. ALBANS, WEST VIRGINIA	25177
355746500200	640	RIVERVIEW DEV. CO.-SHREWSBURY		SHREWSBURY, WEST VIRGINIA	25184
355751400200	2500	SISSONVILLE PUBLIC SERVICE DIST.		SISSONVILLE, WEST VIRGINIA	25320
355843040200	045	VALLEY CAMP COAL CO. OF WARD		WARD, WEST VIRGINIA	25207
355883300200	060	WINIFREDE COAL CO. (CARBON FUEL)		WINIFREDE, WEST VIRGINIA	25214

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[3] FOR FURTHER INFORMATION CONTACT THE REGIONAL REPRESENTATIVE, BUREAU OF WATER HYGIENE, DHEW REGION III, 220 SEVENTH STREET, NE, CHARLOTTESVILLE, VIRGINIA 22901. TEL: 703-296-1416.

LISTING OF WATER SUPPLIES FROM THE "CWSS"

445000000000 SMSA -- CHARLESTON, SOUTH CAROLINA*

I. D. #	POP.	NAME OF SUPPLY			
445059010080	260	BERKELEY COUNTRY CLUB SUBDIV.	WATER SUPPLY, RT.2, BOX 26A	MONCKS CORNER,S. CAROLINA	29461
445059020080	140	CAROMI VILLAGE SUBDIVISION	COASTAL WATER CO.	GOOSE CREEK, S. CAROLINA	29445
445059030080	200	COLLEGE PARK SUBDIVISION	COASTAL WATER CO.	GOOSE CREEK, S. CAROLINA	29461
445059040080	036	LAND-O-PINES SUBDIVISION	COASTAL WATER CO.	GOOSE CREEK, S. CAROLINA	29445
445148000100	220000	CHARLESTON COMM. OF PUBLIC WORKS		CHARLESTON, S. CAROLINA	29401
445148010100	085	ASHCROFT HALL SUBDIVISION	JAMES ISLAND UTILITY COMPANY	CHARLESTON, S. CAROLINA	29401
445148070100	225	ORLEANS WOODS SUBDIVISION	COASTAL WATER COMPANY	CHARLESTON, S. CAROLINA	29401
445259010100	150	EDISTO BEACH WATER COMPANY		EDISTO BEACH, S. CAROLINA	29438
445259020100	500	WATER COMPANY OF EDISTO BEACH		EDISTO BEACH, S. CAROLINA	29438
445259030100	100	WHEELER WATER COMPANY		EDISTO BEACH, S. CAROLINA	29438
445275000080	141	ELM VILLAGE TRAILER PARK WATER	SUPPLY, P.O. BOX 7014	CHARLESTON HEIGHTS, S.C.	29405
445298000100	2000	FOLLY BEACH MUNICIPAL WATER DEPT	CITY BLDG.	FOLLY BEACH, S.C.	29439
445303000100	025	FORT JOHNSON WATER SUPPLY	CHARLESTON MEDICAL SCHOOL	CHARLESTON, SOUTH CAROLINA	29401
445344050080	7200	COASTAL UTILITY CO - GOOSE CREEK		GOOSE CREEK, S. CAROLINA	29445
445422000100	4300	ISLE OF PALMS WATER CO.		ISLE OF PALMS, S. CAROLINA	29451
445442050100	150	DUNMOVIN SUBDIVISION		JOHNS ISLAND, S. CAROLINA	29455
445586000080	4200	MONCKS CORNER CITY WATER WORKS	CITY HALL	MONCKS, CORNER, S. C.	29461
445606000100	7500	MOUNT PLEASANT CITY WATER WORKS	CITY HALL	MOUNT PLEASANT, S. C.	29464
445606050100	080	PARISH PLACE SUBDIVISION		MOUNT PLEASANT, S. CAROLINA	29464
445704010080	500	HARE,A.D. WATER WORKS		PINOPOLIS, S. CAROLINA	29469
445774000080	1600	ST.STEPHEN MUNICIPAL WATER WORKS	CITY HALL	ST. STEPHEN, S. C.	29479
445844000100	1692	SULLIVANS ISLAND CITY WATER WKS	CITY HALL	SULLIVANS ISLAND, S. C.	29482

*FOR FURTHER INFORMATION CONTACT THE REGIONAL REPRESENTATIVE, BUREAU OF WATER HYGIENE, DHEW REGION IV, 50 SEVENTH STREET, NE, ROOM 4044, ATLANTA, GA. 30323. TEL: 404-526-5452.

LISTING OF WATER SUPPLIES FROM THE "CWSS"

320000000000 SMSA -- CINCINNATI, OHIO, KENTUCKY, INDIANA[5]

I. D. #	POP.	NAME OF SUPPLY			
320086200080	4800	BOONE COUNTY WATER DISTRICT		BURLINGTON, KENTUCKY	41005
320096900590	1130	BROMLEY WATER DEPT.	CITY HALL	BROMLEY, KENTUCKY	41086
320120850190	44000	CAMPBELL CO. W.D. NO.1-FT.THOMAS	BOX 152	FT. THOMAS, KENTUCKY	41075
320120860190	4000	CAMPBELL CO.W.D.-HIGHLAND HGTS.		HIGHLAND HEIGHTS, KENTUCKY	41076
320161200190	2000	COLD SPRING MUN. WATER SUPPLY		COLD SPRING, KENTUCKY	71076
320176400590	100000	COVINGTON WATER WORKS DEPT.	ROOM 208	COVINGTON, KENTUCKY	41011
320178800080	025	W.J. CRAIG TRAILER PARK	RT. NO.1	UNION, KENTUCKY	41091
320283600080	15000	FLORENCE WATER AND SEWER COMM.	7431 US ROUTE 42	FLORENCE, KENTUCKY	41042
320422900590	55000	KENTON CO. W.D. NO.1, WINSTON PK	HOWARD AND GRAND	WINSTON PARK, KENTUCKY	41015
320482500590	6014	LUDLOW WATER WORKS		LUDLOW, KENTUCKY	41016
320518410190	650	MENTOR W.D.-CALIF.-MENTOR-CARTH.		MENTOR, KENTUCKT	41060
320565200190	65000	NEWPORT WATER WORKS DEPT.	2055 MEMORIAL PARKWAY	NEWPORT, KY.	41075
320607850080	000	PETERSBURG COAL CO.		PETERSBURG, KENTUCKY	41080
320655800080	280	RIVER RIDGE PARK INC.,TRAILER PK	RIVER ROAD	BURLINGTON, KENTUCKY	41005
320708450190	1500	SILVER GROVE MUN. WATER SUPPLY	(C.O R.R.)	SILVER GROVE, KENTUCKY	41085
320712500080	140	SKYLINE TRAILER PARK		CONSTANCE, KENTUCKY	41009
320761400590	1500	TAYLOR MILL WATER DEPT.		COVINGTON, KENTUCKY	41015
320809600080	1500	WALTON MUNICIPAL WATER SUPPLY	CITY HALL BLDG	WALTON, KY	41094
320836800190	650	WILDER MUN. WATER SUPPLY	CITY BLDG.	WILDER, KY	41076
320845300590	744	WINSTON PARK WATER WORKS		WINSTON PARK, KY.	41011
517036300150	6300	AURORA UTILITIES	110 MAIN STREET	AURORA, INDIANA	47001
517226600150	950	DILLSBORO WATER WORKS	BOX 44	DILLSBORO, INDIANA	47018
517226610150	520	ELROD WATER CO. INC.	RT. NO. 1	DILLSBORO, INDIANA	47018
517340100150	3300	GREENDALE UTILITIES	P.O. BOX 269	LAWRENCEBURG, INDIANA	46135
517466400150	5200	LAWRENCEBURG WATER DEPT.	P.O. BOX 112	LAWRENCEBURG, INDIANA	47025
517631900150	2000	NORTH DEARBORN WATER DISTRICT		YORKVILLE, INDIANA	47022
517879750150	1770	TRI-TOWNSHIP WATER CORP	R.R. # 1	LAWRENCEBURG, INDIANA	47025
538004900310	1300	ADDYSTON MUN. WATER SUPPLY	CITY HALL	ADDYSTON, OHIO	45001
538050400130	2200	BATAVIA MUN. WATER SUPPLY	389 MAIN ST.	BATAVIA, OHIO	45103
538074800130	3400	BETHEL MUNICIPAL WATER SUPPLY	CITY BLDG.	BETHEL, OHIO	45106
538160300310	850000	CINCINNATI CITY WATER WORKS	4747 SPRING GROVE AVENUE	CINCINNATI, OHIO	45232
538166050130	18000	PIERCE,UNION,BATAVIA SUBDISTRICT	OF CLERMONT COUNTY SEWER &W.DIST	AMELIA, OHIO	45102
538166060130	11900	MIAMI-GOSHEN-STONELICK W. WORKS	CLERMONT COUNTY SEWER DISTRICT	MILFORD, OHIO	45150
538167300310	5000	CLEVES MUN. WATER SUPPLY	700 [illegible]. MIAMI AVE	CLEVES, OHIO	45002
538258700130	179	EPWORTH HEIGHTS ASSOCIATION	BOX 113	BRANCH HILL, OHIO	45108
538268800130	1463	FELICITY MUNICIPAL WATER SUPPLY	MUNICIPAL BLDG.	FELICITY, OHIO	45120
538281400830	11000	FRANKLIN WATER DEPARTMENT		FRANKLIN, OHIO	45005
538308000310	3000	GLENDALE MUNICIPAL WATER SUPPLY	SHARON ROAD	GLENDALE, OHIO	45246
538345100310	5050	HARRISON MUNICIPAL WATER SUPPLY		HARRISON, OHIO	45030
538345150310	060	LOTTON SUBDIVISION TRAILER PARK	ROUTE 4	HARRISON, OHIO	45030
538378200310	15000	INDIAN HILL WATER WORKS	6525 DRAKE ROAD	INDIAN HILL, OHIO	45243
538434700830	5960	LEBANON MUNICIPAL WATER SUPPLY	CITY BLDG.	LEBANON, OHIO	45036
538434750830	261	OTTERBEIN HOME FOR AGED	RFD 2	LEBANON, OHIO	45036
538454400310	5300	LOCKLAND MUN. WATER SUPPLY	MUNICIPAL BLDG.	LOCKLAND, OHIO	45243
538462000130	7500	LOVELAND CITY WATER SUPPLY	CITY BLDG.	LOVELAND, OHIO	45140
538486000310	200	MAPLE LEAF MOBIL HOME PARK	RT. 52 AND KILBY ROAD	HARRISON, OHIO	45030
538498400830	6200	MASON CITY WATER SUPPLY	202 W. MAIN ST.	MASON, OHIO	45040
538522900130	4530	MILFORD CITY WATER SUPPLY	CITY BLDG.	MILFORD, OHIO	45150
538537000130	104	MOBIL MANOR TRAILER PARK	BOX 33	MILFORD, OHIO	45150
538546000830	1600	MORROW CITY WATER SUPPLY	131 PAMELA DRIVE	MORROW, OHIO	45152
I. D. #	POP.	NAME OF SUPPLY			

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[5] FOR FURTHER INFORMATION CONTACT THE REGIONAL REPRESENTATIVE, BUREAU OF WATER HYGIENE, DHEW REGION V, 433 WEST VAN BUREN STREET, CHICAGO, ILLINOIS 60607. TEL: 312-353-7736.

LISTING OF WATER SUPPLIES FROM THE "CWSS"

50C000000000 SMSA -- CINCINNATI. OHIO, KENTUCKY, INDIANA

I. D. #	POP.	NAME OF SUPPLY			
538590100130	3500	NEW RICHMOND CITY WATER SUPPLY	CITY BLDG.	NEW RICHMOND; OHIO	45157
538617900310	31000	NORWOOD WATER DEPT.	NORWOOD CITY HALL	NORWOOD. OHIO	45212
538697300310	15000	READING WATER DEPT.		READING. OHIO	45215
538755400830	600	SHADOW LAKE VILLAGE TRAILER PK.	RURAL ROUTE 1	MASON. OHIO	45040
538776300830	2720	SOUTH LEBANON MUN. WATER SUPPLY	CITY BLDG.	SOUTH LEBANON. OHIO	45065
538786800830	2500	SPRINGBORO SYSTEM-MILL ST. PLANT		SPRINGBORO. OHIO	45066
538786810830	500	SPRINGBORO SUPPLY.CHAUTAUQUA SYS		SPRINGBORO. OHIO	45066
538835300310	060	TWIGHTWEE COMMUNITY WELFARE CORPRT. 1		LOVELAND. OHIO	45036
538863730830	2111	WARREN CO.-FRANKLIN WATER DIST.		LEBANON. OHIO	45036
538863740830	5135	WARREN CO.-HAMILTON-DEERFIELD	WATER DISTRICT	LEBANON. OHIO	45036
548863750830	4067	WARREN CO.-LEBANON WATER DIST.	903 N. BROADWAY. BOX 96	LEBANON. OHIO	45036
538863760830	991	WARREN CO.-PENNYRORAL WATER DIST	WARREN CO. WATER DEPT.	LEBANON. OHIO	45036
538863770830	637	WARREN CO.-ROCHESTER WATER DIST.	WARREN CO. WATER DEPT.	LEBANON. OHIO	45036
538874300830	1800	WAYNESVILLE WATER DEPT.		WAYNESVILLE. OHIO	45068
538901800130	2200	WILLIAMSBURG MUN. WATER SUPPLY	FIFTH ST.	WILLIAMSBURG. OHIO	45776
538918500310	10000	WYOMING MUNICIPAL WATER SUPPLY	800 OAK ST.	WYOMING. OHIO	45215

FOR FURTHER INFORMATION CONTACT THE REGIONAL REPRESENTATIVE, BUREAU OF WATER HYGIENE, DHEW REGION V, 433 WEST VAN BUREN STREET, CHICAGO, ILLINOIS 60607. TEL; 312-353-7736.

LISTING OF WATER SUPPLIES FROM THE "CWSS"

600000000000 SMSA -- KANSAS CITY, MISSOURI AND KANSAS[6]

I. D. #	POP.	NAME OF SUPPLY			
619119901050	3600	BONNER SPG. CITY WATER SUPPLY	CITY HALL BLDG	BONNER SPRINGS, KANSAS	66012
619248600460	2100	DESOTO WATER DEPT.	CITY HALL	DESOTO, KANSAS	66018
619248650460	3500	SUNFLOWER ARMY AMMUNITION DEPOT		DESOTO, KANSAS	66019
619268400460	412	EDGERTON CITY WATER SUPPLY	CITY HALL BLDG	EDGERTON, KANSAS	66021
619306000460	12000	J.C. NICHOLS CO. (FAIRWAY, KAN.)	310 WARD PARKWAY	KANSAS CITY, MISSOURI	64112
619337700460	2375	GARDNER CITY WATER SUPPLY	CITY HALL BLDG	GARDNER, KANSAS	66030
619457800460	160000	WATER DISTRICT NO.1, JOHNSON CO.	5016 DEARBORN	SHAWNEE-MISSION, KANSAS	66202
619457910460	520	RURAL WATER DIST. NO.1 - JOHNSON	COUNTY	DESOTO, KANSAS	66019
619457920460	1500	RURAL W.D. NO.2 - JOHNSON COUNTY		STILLWELL, KANSAS	66085
619457930460	1200	RURAL W.D. NO.3 - JOHNSON COUNTY	BOX 105 ROUTE 2	LENEXA, KANSAS	66218
619457940460	540	RURAL W.D. NO.4 - JOHNSON COUNTY	ROUTE 2, BOX 60	OLATHE, KANSAS	66061
619465901050	179923	KANSAS CITY WATER WORKS	1211 NORTH 8TH STREET	KANSAS CITY, KANSAS	66110
619510400460	4800	LENEXA MUNICIPAL WATER SUPPLY	P.O. BOX 5293	LENEXA, KANSAS	66215
619675400460	15000	OLATHE MUNICIPAL WATER WORKS	CITY HALL	OLATHE, KANSAS	66061
619675440460	3266	OLATHE NAVAL AIR STATION, USNAS		OLATHE, KANSAS	66061
619675450460	050	LAKE OLATHE TRAILER COURT	ROUTE 3, BOX 184	OLATHE, KANSAS	66061
619753000460	1000	QUIVIRA INC. (QUIVIRA LAKE)		KANSAS CITY, KANSAS	66106
619858000460	1080	SPRING HILL WATER DEPT.		SPRING HILL, KANSAS	66083
619873450460	1750	QUICK-WAY HOMES, WATER SUPPLY	(SUNFLOWER VILLAGE)	DE SOTO, KANSAS	66019
619993711050	736	RURAL WATER DISTRICT NO.1	WYANDOTTE COUNTY, BETHEL	BETHEL, KANSAS	66074
619993721050	400	RURAL WATER DISTRICT NO.2,	WYANDOTTE CO., RT.1	BASEHOR, KANSAS	66007
619993731050	250	RURAL WATER DISTRICT NO.3	WYANDOTTE COUNTY, P.O. BOX 244	BONNER SPRINGS, KANSAS	66012
619993741050	450	RURAL WATER DISTRICT NO. 4,	WYANDOTTE COUNTY (BONNER SPGS.)	BONNER SPRINGS, KANSAS	66012
619993771050	450	RURAL W.D.NO.7-WYANDOTTE & LEAV-	ENWORTH CO., 13724 ARCHER RD.	BONNER SPRINGS, KANSAS	66012
628022200190	500	ARCHIE MUNICIPAL WATER SUPPLY		ARCHIE, MISSOURI	64725
628052800190	10000	BELTON MUNICIPAL WATER SUPPLY		BELTON, MISSOURI	64012
628052850190	335	JACKSON COUNTY WATER CO.	(DIKE'S ADDITION), P.O. BOX 183	BELTON, MISSOURI	64012
628052860190	085	LAKESIDE GARDENS SUBDIVISION-	RT. 2, BOX 225A	BELTON, MISSOURI	64012
628052870190	050	LAZY ACRES TRAILER PARK		BELTON, MISSOURI	64012
628052880190	070	OLSON'S OASIS WELL TRAILER PARK	RT. 2	BELTON, MISSOURI	64012
628052890190	1165	WEST BELTON SERVICE CO.	P.O. BOX 349	BELTON, MISSOURI	64012
628075600480	7000	BLUE SPRINGS WATER DEPT.	903 MAIN STREET	BLUE SPRINGS, MISSOURI	64015
628109200480	1850	BUCKNER MUNICIPAL WATER SUPT.		BUCKNER, MISSOURI	64016
628155700240	2600	CLAY COUNTY WATER DIST. NO. 2		LIBERTY, MISSOURI	64068
628155730240	750	CLAY COUNTY WATER DIST. NO. 3		HOLT, MISSOURI	64048
628155740240	600	CLAY COUNTY WATER DIST. NO. 4	ROUTE 4, BOX 242	LIBERTY, MISSOURI	64068
628155750240	450	CLAY COUNTY WATER DIST. NO. 5	P.O. BOX 161	LIBERTY, MISSOURI	64068
628155760240	700	CLAY COUNTY WATER DIST. NO. 6	BOX 227	KEARNEY, MISSOURI	64060
628158400190	250	CLEVELAND MUNICIPAL WATER SUPPLY		CLEVELAND, MISSOURI	64734
628184200190	280	CREIGHTON MUNICIPAL WATER SUPPLY		CREIGHTON, MISSOURI	64739
628199800830	760	DEARBORN MUN. WATER SUPPLY		DEARBORN, MISSOURI	64439
628221400190	760	DREXEL MUNICIPAL WATER SUPPLY		DREXEL, MISSOURI	64742
628229800190	245	EAST LYNNE MUNICIPAL WATER SUP.	CITY BLDG.	EAST LYNNE, MISSOURI	64743
628232200830	400	EDGERTON MUN. WATER SUPPLY		EDGERTON, MISSOURI	64444
628258000240	10100	EXCELSOIR SPRINGS WATER SUPPLY		EXCELSOIR SPRINGS, MISSOURI	64024
628289800190	525	FREEMAN MUNICIPAL WATER SUPPLY		FREEMAN, MISSOURI	64746
628289850190	240	LAKE ANNETTE WATER SUPPLY	ROUTE 1	FREEMAN, MISSOURI	64746
628298200190	900	GARDEN CITY MUNICIPAL WATER	SUPPLY	GARDEN CITY, MISSOURI	64747
628308100240	25000	GLADSTONE MUNICIPAL WATER SUPPLY	BOX 10688	GLADSTONE, MISSOURI	64118
628321000480	750	GRAIN VALLEY CITY WATER SUPPLY	CITY HALL BUILDING	GRAIN VALLEY, MISSOURI	64029
I. D. #	POP.	NAME OF SUPPLY			

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[6] FOR FURTHER INFORMATION CONTACT THE REGIONAL REPRESENTATIVE, BUREAU OF WATER HYGIENE, DHEW REGION VI, 601 EAST 12TH STREET, KANSAS CITY, MISSOURI 64106. TEL: 816-374-3036.

LISTING OF WATER SUPPLIES FROM THE "CWSS"

600000000000   SMSA -- KANSAS CITY, MISSOURI AND KANSAS

I. D. #	POP.	NAME OF SUPPLY			
628351600190	5000	HARRISONVILLE WATER SUPPLY		HARRISONVILLE, MISSOURI	64701
628402600480	116000	MISSOURI WATER CO.	11610 TRUMAN BLVD.	INDEPENDENCE, MISSOURI	64050
628410700480	15000	JACKSON COUNTY WATER DIST. NO.1		GRANDVIEW, MISSOURI	64030
628410710480	19200	JACKSON COUNTY WATER DIST. NO.2	6945 BLUE RIDGE	RAYTOWN, MISSOURI	64130
628410720480	2600	JACKSON COUNTY WATER DIST. NO. 8	P.O. BOX 216	BLUE SPRINGS, MISSOURI	64015
628410730480	1000	JACKSON COUNTY WATER DIST. NO.12		GREENWOOD, MISSOURI	64034
628410740480	1600	JACKSON COUNTY WATER DIST. NO.13	RT.4, BOX 518	LEE'S SUMMIT, MISSOURI	64063
628421800480	650000	KANSAS CITY MUNICIPAL WATER	SUPPLY, 414 E. 12TH STREET	KANSAS CITY, MISSOURI	64106
628422400240	1000	KEARNEY MUNICIPAL WATER SUPPLY	CITY HALL BLDG.	KEARNEY, MO.	64060
628442850480	7000	LAKE CITY ARMY AMMUNITION PLANT	WATER SUPPLY	INDEPENDENCE, MISSOURI	64050
628444700480	1200	LAKE TAPAWINGO WATER SUPPLY	185-A	BLUE SPRINGS, MISSOURI	64015
628445000830	1150	LAKE WAUKOMIS WATER SYSTEM	1147 SHORE DRIVE	PARKVILLE, MISSOURI	64152
628445500480	425	LAKE WINNEBAGO WATER SUPPLY		GREENWOOOD, MISSOURI	64034
628455400240	1200	LAWSON MUNICIPAL WATER SUPPLY		LAWSON, MISSOURI	64062
628459600480	19000	LEE'S SUMMIT MUNICIPAL WATER	SUPPLY	LEE'S SUMMIT, MISSOURI	64063
628468600240	14000	LIBERTY MUNICIPAL WATER SUPPLY		LIBERTY, MISSOURI	64068
628555000240	390	MOSBY MUNICIPAL WATER SUPPLY	CITY HALL BLDG.	MOSBY, MO.	64073
628587200240	6000	NORTH KANSAS CITY WATER SUPPLY	CITY HALL BLDG.	NORTH KANSAS CITY, MO.	64141
628591600480	2000	OAK GROVE MUNICIPAL WATER SUPPLY		OAK GROVE, MISSOURI	64075
628614450830	9000	MISSOURI CITIES WATER CO.		PARKVILLE, MISSOURI	64152
628621400190	800	PECULIAR MUNICIPAL WATER SUPPLY		PECULIAR, MISSOURI	64078
628636000830	1900	PLATTE CITY MUN. WATER SUPPLY	CITY HALL BLDG.	PLATTE CITY, MO.	64079
628636040830	210	PLATTE COUNTY WATER DIST. NO.1		FARLEY, MISSOURI	64028
628636050830	500	PLATTE COUNTY WATER DISTRICT #2		CAMDEN POINT, MISSOURI	64018
628636060830	520	PLATTE COUNTY WATER DIST. NO. 3		WESTON, MISSOURI	64098
628636070830	904	PLATTE COUNTY WATER DISTRICT #4	BOX 129	PLATTE CITY, MISSOURI	64079
628636080830	1500	PLATTE COUNTY WATER DIST. NO.5	BOX 5	WALDRON, MISSOURI	64092
628636090830	800	PLATTE COUNTY WATER DISTRICT #6	RT. 27	PARKVILLE, MISSOURI	64152
628637800190	3700	PLEASANT HILL MUNICIPAL WATER	PLANT	PLEASANT HILL, MISSOURI	64080
628667400190	400	RAYMORE MUNICIPAL WATER SUPPLY		RAYMORE, MISSOURI	64083
628667800480	18000	RAYTOWN WATER CO.	9820 E. 63RD ST.	RAYTOWN, MISSOURI	64130
628678100190	10000	RICHARDS-GEBAUR AIR FORCE BASE	WATER SUPPLY	RICHARD-GEBAUR, MISSOURI	64030
628744600240	1800	SMITHVILLE WATER DEPT.		SMITHVILLE, MISSOURI	64080
628770900480	4000	SUGAR CREEK WATER DEPT.		SUGAR CREEK, MISSOURI	64054
628791400830	240	TRACY MUNICIPAL WATER SUPPLY		TRACY, MISSOURI	64091
628804900480	137	UNITY VILLAGE WATER SUPPLY		LEE'S SUMMIT, MISSOURI	64063
628832900830	756	WEATHERBY LAKE MUNICIPAL WATER	SYSTEM, ROUTE 22	PARKVILLE, MISSOURI	64497
628841800830	1300	WESTON MUNICIPAL WATER SUPPLY		WESTON, MISSOURI	64098

FOR FURTHER INFORMATION CONTACT THE REGIONAL REPRESENTATIVE, BUREAU OF WATER HYGIENE, DHEW REGION VI, 601 EAST 12TH STREET, KANSAS CITY, MISSOURI 64106. TEL: 816-374-3036.

LISTING OF WATER SUPPLIES FROM THE "CWSS"

70C000000000   SMSA -- NEW ORLEANS, LOUISIANA[7]

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 I. D. #      POP.        NAME OF SUPPLY

721003900520    1200      ABITA SPRINGS WATER DEPT.                                            ABITA SPRINGS, LOUISIANA    70420
721201900520    9000      COVINGTON WATER DEPT.                                                COVINGTON, LOUISIANA        70433
721201550520     595      COUNTRY CLUB ESTATES           TIDEWATER UTIL.,230 ROBINHOOD DRCOVINGTON, LOUISIANA        70433
721201560520     160      KINGS FOREST SUBD.,TIDEWATER UTL230 ROBINHOOD DR.                   COVINGTON, LOUISIANA        70433
721201600520     048      RIVER FOREST SUBDIVISION                                             COVINGTON, LOUISIANA        70433
721201610520     300      RIVERWOOD UTILITY CORP.        230 ROBINHOOD DRIVE                   COVINGTON, LOUISIANA        70433
721201650520     700      TCHEFUNCTA CLUB ESTATES        RT.1                                  COVINGTON, LOUISIANA        70433
721374400260    3000      GRAND ISLE WATER DEPT.                                               GRAND ISLE, LOUISIANA       70358
721386100260   27000      GRETNA WATER DEPT.             100 FIFTH STREET                      GRETNA, LOUISIANA           70053
7[illegible]459300260  201000      JEFFERSON PARRISH W.W. DIST.NO.1POST OFFICE BOX 10007       NEW ORLEANS, LA.            70121
7[illegible]459400260  100000      JEFFERSON PARISH W.W. DIST. NO.24500 WEST BANK EXP.         MARRERO, LA.                70076
721570700520    1000      MADISONVILLE WATER DEPT.                                             MADISONVILLE, LA.           70447
72[illegible]74600520    3300      MANDEVILLE WATER DEPT.                                      MANDEVILLE, LOUISIANA       70448
721574650520     499      FOUNTAINBLEAU STATE PARK                                             MANDEVILLE, LOUISIANA       70448
721574700520     775      SOUTHEAST LOUISIANA HOSPITAL                                         MANDEVILLE, LOUISIANA       70448
721656500360  632225      NEW ORLEANS S&W BD.-CARROLLTON  SYSTEM, CITY HALL                    NEW ORLEANS, LOUISIANA      70112
721656600360   19900      NEW ORLEANS S&W BD.-ALGIERS SYSTCITY HALL                            NEW ORLEANS, LOUISIANA      70112
721656900360     200      VENETIAN ISLES WATER SYSTEM    13232 CHEF MENTUER HWY.BOX 29188NEW ORLEANS, LA.            70129
721692940520     120      PEARL RIVER AND OZONE WATER CO.                                      PEARL RIVER, LOUISIANA      70452
721776900440   50000      ST.BERNARD PARISH W.WKS.DIST. #1P.O. BOX 1278                        CHALMETTE, LOUISIANA        70043
721776400440    6400      ST.BERNARD PARISH W.WKS.DIST. #2ST. BERNARD HWY., EAST               ST. BERNARD, LOUISIANA      70085
721811800520   12000      SLIDELL WATER DEPT.                                                  SLIDELL, LOUISIANA          70458
721811250520     400      COUNTRY CLUB ESTATES (SLIDELL)  WATER SUPPLY                         SLIDELL, LOUISIANA          70458
721811900520     250      TAMMANY MOBILE HOME PARK       101 BOSWORTH                          SLIDELL, LOUISIANA          70458
721837800520     350      SUN WATER DEPT.                                                      SUN, LOUISIANA              70463
721928200260   15000      WESTWEGO WATER DEPT.           415 AVENUE A                          WESTWEGO, LOUISIANA         70094
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[7] FOR FURTHER INFORMATION CONTACT THE REGIONAL REPRESENTATIVE, BUREAU OF WATER HYGIENE, DHEW REGION VII, 1114 COMMERCE STREET, DALLAS, TEXAS 75202. TEL: 214-749-2118.

LISTING OF WATER SUPPLIES FROM THE "CWSS"

8C0000000000 SMSA -- PUEBLO, COLORADO*

I. D. #	POP.	NAME OF SUPPLY			
807075600510	500	BEULAH WATER DISTRICT		BEULAH, COLORADO	81023
807075670510	150	PUEBLO MOUNTAIN PARK WATER SYST.	RT.1, BOX 49	BEULAH, COLORADO	81023
807079400510	035	BLENDE WATER SUPPLY	2001 SANTE FE DRIVE	PUEBLO, COLORADO	81004
807086400510	600	BOONE WATER DISTRICT	BOX 68	BOONE, COLORADO	81025
807181050510	160	COLORADO CITY WATER & SAN. DIST.		COLORADO CITY, COLORADO	81069
807745200510	104000	PUEBLO WATER WORKS		PUEBLO, COLORADO	81002
807745270510	150	BUCCIARELLI WATER SUPPLY-PUEBLO	1201 SOCORRO PLACE	PUEBLO, COLORADO	81004
807745260510	150	CHERRY LANE WATER SUPPLY	646 CHERRY LANE	PUEBLO, COLORADO	81005
807745310510	050	KIRKLAND WATER SUPPLY, T.P.	RYE STAR ROUTE	PUEBLO, COLORADO	81004
807745320510	350	MESA SOFT WATER	2129 SOUTH ROAD	PUEBLO, COLORADO	81001
807745330510	250	O'NEAL WATER SUPPLY	8TH AND COURT	PUEBLO, COLORADO	81003
807745340510	050	PUEBLO GARDENS WATER CO.	4505 GOODNIGHT AVE.	PUEBLO, COLORADO	81005
807745350510	120	RIVERDALE CLUB PARK WATER SYSTEM	RT. 2, BOX 181	PUEBLO, COLORADO	81004
807745360510	3500	ST. CHARLES MESA WATER SUPPLY	RT.4,BOX 9, ROSELAWN & SOUTH RDS	PUEBLO, COLORADO	81004
807745370510	072	ST. JOSEPH WATER SUPPLY	P.O. BOX 367	PUEBLO, COLORADO	81002
8C7745380510	600	SALT CREEK WATER ASSN.	1421 LOREDO	PUEBLO, COLORADO	81004
8C7745390510	175	SANDERS WATER SUPPLY	1712 LYNWOOD LANE	PUEBLO, COLORADO	81004
807745400510	015	SUNSET MOBILE PARK WATER SUPPLY	602 ACERO	PUEBLO, COLORADO	81005
807745410510	060	SUNSET VIEW WATER ASSN.	4535 GOODNIGHT AVE.	PUEBLO, COLORADO	81005
807793800510	500	RYE CITY WATER SUPPLY		RYE, COLORADO	81005

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*FOR FURTHER INFORMATION CONTACT THE REGIONAL REPRESENTATIVE, BUREAU OF WATER HYGIENE, DHEW REGION VIII, 19TH AND STOUT STREETS, DENVER, COLORADO 80202. TEL: 303-297-3709.

LISTING OF WATER SUPPLIES FROM THE "CWSS"

9C0000000000 SMSA -- SAN BERNARDINO-RIVERSIDE-ONTARIO, CALIFORNIA'

I. D. #	POP.	NAME OF SUPPLY			
905003000360	2500	ADELANTO COMM. SERVICE DISTRICT	11740 BARTLETT AVENUE	ADELANTO. CALIF.	92301
905016850360	060	SAPPHIRE MUTUAL WATER CO.	5140 N. SAPPHIRE ST.	ALTA LOMA. CALIFORNIA	91701
905023500360	050	GLEN MARTIN MUTUAL WATER CO.		ANGELUS OAKS. CALIF	92305
905026450330	038	DE ANZA MUTUAL WATER CO.. INC.		ANZA. CALIFORNIA	92306
905027610360	250	APPLE VALLEY HEIGHTS C.W. DIST.	9156 FLORA VISTA RD.	APPLE VALLEY. CALIF.	92307
905027700360	200	AZTEC WATER COMPANY		APPLE VALLEY CALIF.	92307
905027750360	8000	APPLE VALLEY RANCHO WATER CO. #1	P.O. BOX 1	APPLE VALLEY. CALIF	92307
905027760360	200	APPLE VALLEY RANCHO W.CO. NO.2	P.O. BOX 1 (BELLEVIEW H)	APPLE VALLEY. CALIF.	92307
905027780360	025	APPLE VALLEY TERRACE WATER CO.		APPLE VALLEY, CALIFORNIA	92307
905027810360	1800	S. CAL W.C. - VICTORVILLE NO. 1		APPLE VALLEY. CALIF.	92307
905027830360	052	S. CAL W.C. - VICTORVILLE NO. 3		APPLE VALLEY, CALIF.	92307
905027840360	1000	S. CAL W.C. - VICTORVILLE NO.4		APPLE VALLEY. CALIF.	92307
905027850360	170	S. CAL W.C. - VICTORVILLE NO. 5		APPLE VALLEY. CALIF	92307
905027900360	100	YOUNGTOWNE WATER CO.	23995 SOUTH ROAD	APPLY VALLEY. CALIF.	92345
905027910360	200	APPLE VALLEY FOOTHILL C W D		APPLE VALLEY. CALIFORNIA	92307
905033700360	1400	ARROWBEAR PARK COUNTY WATER DIST	32861 HILLTOP BLVD.	ARROWBEAR LAKE. CALIF.	92308
905033900360	1400	CAMPUS CRUSADE FOR CHRIST		ARROWHEAD SPRINGS. CALIF.	92400
905045830360	040	BAKER WATER COMPANY	BAKER RD. AT HIGHWAY 127	BAKER. CALIFORNIA	92309
905045850360	175	D.H. MURDOCK-BELL TEL HOUSING		BAKER. CALIF.	92309
905049800330	13500	BANNING CITY WATER SUPPLY		BANNING. CALIF.	92220
905049900330	150	MOUNTAIN WATER CO.	12-727 HIGHLAND HOME RD.	BANNING. CALIFORNIA	92220
905049990330	150	BANNING HEIGHTS MUTUAL WATER CO.	BOX 367	BANNING. CALIFORNIA	92220
905051600360	18000	S. CAL W.C. - BARSTOW		BARSTOW. CALIFORNIA	92311
905052000360	932	BARSTOW HEIGHTS COMM SER DIST.		BARSTOW. CALIF.	92311
905055810330	040	GLEN EYRIE HEIGHTS MUT.WATER CO.		BEAUMONT. CALIFORNIA	92223
905055850330	9495	BEAUMONT IRRIGATION DISTRICT	560 MAGNOLIA	BEAUMONT. CALIFORNIA	92223
905069300360	4000	BIG BEAR CITY COMMUNITY SER DIST		BIG BEAR CITY. CALIF.	92314
905069610360	8460	S. CAL W.C. - BEAR VALLEY	BOX 1547	BIG BEAR LAKE. CALIF.	92315
905069620360	2700	S. CAL W.C. - BIG BEAR PINES	BOX 1547	BIG BEAR LAKE. CALIF.	92315
905069640360	3500	MOONRIDGE MUTUAL WATER CO.		BIG BEAR LAKE. CALIF.	92315
905079250360	1033	CRESTMORE VILLAGE WATER CO.		BLOOMINGTON. CALIF.	92316
905079350360	2100	MARYGOLD MUTUAL WATER CO.	9715 ADLER	BLOOMINGTON. CALIF.	92316
905079400360	5000	S. CAL W.C. - BLOOMINGTON		BLOOMINGTON. CALIF.	92316
905080450360	150	DE MENT WATER CO.		BLUE JAY. CALIF.	92317
905081600330	7400	BLYTHE CITY WATER SUPPLY	P. O. BOX 725	BLYTHE. CALIF.	92225
905081610330	160	DESERT VERDE MUTUAL WATER CO.	P.O. BOX 201	BLYTHE. CALIFORNIA	92225
905108610330	300	CABAZON WATER COMPANY	P.O. BOX 133	CABAZON. CALIF.	92230
905108620330	555	JENSEN WATER CO.	MAIN AND BROADWAY	CABAZON. CALIF.	92230
905108650330	500	CABAZON COUNTY WATER DISTRICT	P.O. BOX 297	CABAZON. CALIF.	92230
905112250330	000	G.GARDNER WATER CO.		CALIMESA. CALIF.	92320
905112300330	540	HARRY SLACK DOMESTIC WATER CO		CALIMESA. CALIF.	92320
905112400330	7500	SOUTH MESA MUTUAL WATER CO.	391 WEST AVE "L"	CALIMESA. CALIF.	92320
905112600330	320	CALIMESA WATER DISTRICT		CALIMESA. CALIFORNIA	92320
905139250330	4141	DESERT WATER AGENCY		PALM SPRINGS. CALIF.	92262
905139270330	090	FLYING "H" MUTUAL WATER CO.	P.O. BOX 2	CATHEDRAL CITY. CALIF.	92234
905142900360	1707	ARROWHEAD MANOR WATER CO.		CEDAR GLEN. CALIF.	92321
905143450360	2000	CEDARPINES PARK MUTUAL WATER CO.	P. O. BOX 65	CEDARPINES. CALIF.	92322
905149300330	150	BONITA VISTA MUTUAL WATER CO.	9509 OAK GLEN RD.	CHERRY VALLEY. CALIF.	92223
905153000360	15000	CHINO MUNICIPAL WATER SYSTEM	P.O. BOX 667	CHINO. CALIF	91710
905153010360	100	MOUNTAIN VIEW PARK-MUT. WATER CO	ROUTE 3 BOX 105	CHINO. CALIF.	91710
I. D. #	POP.	NAME OF SUPPLY			

'FOR FURTHER INFORMATION CONTACT THE REGIONAL REPRESENTATIVE, BUREAU OF WATER HYGIENE, DHEW REGION IX,
50 FULTON STREET, SAN FRANCISCO, CALIFORNIA 94102. TEL: 415-556-5677

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                                          LISTING OF WATER SUPPLIES FROM THE "CWSS"
900000000000    SMSA -- SAN BERNARDINO-RIVERSIDE-ONTARIO, CALIFORNIA

 I. D. #     POP.        NAME OF SUPPLY

905153020360      740    PARK WATER CO.                                                    CHINO, CALIF.                  91710
905153040360     5700    POMONA VALLEY WATER CO                                            CHINO, CALIFORNIA              91710
905153050360     3318    S. CAL W.C. CHINO, WATER SUPPLY 321 YALE AVE.                     CLAREMONT, CALIF.              91711
9C5153410360      000    CHINO BASIN MUNICIPAL WATER DIST8555 ARCHIBALD AVE.               CUCAMONGA, CALIF.              91730
905166800330     7515    COACHELLA CITY WATER SUPPLY     1515 SIXTH STREET                 COACHELLA, CALIF.              92236
9C5166330330      042    COACH VAL.CWD-BERMUDA DUNES     P. O. BOX 1058                    COACHELLA, CALIF.              92336
905166340330      423    COACH VAL CWD-COOK ROAD         P.O. BOX 1058                     COACHELLA, CALIF.              92336
905166350330     1750    COACH VAL CWD-DATE PALM DRIVE   P.O. BOX 1058                     COACHELLA, CALIF.              92336
905166360330      115    COACH. VAL. CWD-DEL SOL RD.     P.O. BOX 1058                     COACHELLA, CALIF.              92336
905166370330      133    COACH. VAL. CWD-JACKSON ST.     P.O. BOX 1058                     COACHELLA, CALIF.              92336
905166380330      086    COACH. VAL. C.W.D.-JEFFERSON ST.P.O. BOX 1058                     COACHELLA, CALIF.              92336
9C5166390330      970    COACH. VAL. CWD-I.D. #8         P.O. BOX 1058                     COACHELLA, CALIF.              92336
905166400330      397    COACH. VAL. CWD-I.D. #10        P.O. BOX 1058                     COACHELLA, CALIF.              92336
905166410330     1490    COACH. VAL. CWD-I.D. #11        P.O. BOX 1058                     COACHELLA, CALIF.              92336
905166420330      100    COACH.VAL.CWD-COACHELLA HEIGHTS P.O. BOX 1058                     COACHELLA, CALIF.              92336
905166430330      112    COACH.VAL. CWD-HIDDEN SPGS      P.O. BOX 1058                     COACHELLA, CALIF.              92336
905166440330     1730    COACH. VAL. CWD-INDIAN WELLS    P.O. BOX 1058                     COACHELLA, CALIF.              92336
905166450330     2700    COACH. VAL. CWD-PALM CITY       P.O. BOX 1058                     COACHELLA, CALIF.              92336
905166460330      060    COACH.VAL. CWD-LA QUINTA        P.O. BOX 1058                     COACHELLA, CALIF.              92336
905166470330      170    COACH. VAL. CWD-NAIROBI         P.O. BOX 1058                     COACHELLA, CALIF.              92336
905166480330     4760    COACH. VAL. CWD-PALM DESERT     P.O. BOX 1058                     COACHELLA, CALIF.              92336
905166490330     1515    COACH. VAL. CWD-THOUSAND PALMS  P.O. BOX 1058                     COACHELLA, CALIF.              92336
905166500330     1310    COACH. VAL. CWD-TAMARISK        P.O. BOX 1058                     COACHELLA, CALIF.              92336
905166510330      375    COACH. VAL. CWD-THERMAL         P.O. BOX 1058                     COACHELLA, CALIF.              92336
905171600360    19500    COLTON MUNICIPAL WATER SUPPLY   650 N. 8TH. STREET                COLTON, CALIF.                 92324
905171620360     2000    TERRACE WATER CO.               919 WEST F STREET                 COLTON, CALIF.                 92324
905171650360      132    E. COLTON HEIGHTS MUT. WATER CO.                                  COLTON, CALIF.                 92324
905171690330      175    RECHE CANYON WATER CO.          7080 RECHE CANYON RD.             COLTON, CALIF.                 92324
905171700360     4500    RIVERSIDE HIGHLANDS WATER CO.                                     COLTON, CALIF.                 92324
905171750360      114    TRINITY MUTUAL WATER CO.        12710 LA CADENA DRIVE             COLTON, CALIF.                 92324
905171760360      200    SULLIVAN MUTUAL WATER CO.       11695 RICHE CANY.                 COLTON, CALIF.                 92324
905179400330    30000    CORONA CITY WATER CO.                                             CORONA, CALIF.                 91720
905179450330     3000    HOME GARDENS WATER COMPANY                                        CORONA, CALIF.                 91720
905189610360      300    ARROWHEAD HIGHLANDS MUT. SER. COP.O. BOX 1002                     CRESTLINE, CALIF.              92325
905189620360      150    HORSESHOE BEND MTN. CLUB MUTUAL WATER ASSN., 127 W. BIXBY RD      LONG BEACH, CALIF.             90807
905189630360     5500    LAKE GREGORY WATER CO.                                            CRESTLINE, CALIF.              92325
905189650360     2000    VALLEY OF ENCHANTMENT MUT. WATERCOMPANY, BOX 610                  CRESTLINE, CALIF.              92325
905189660360      700    VALLEY VIEW MUTUAL WATER CO.    P.O. BOX 301                      CRESTLINE, CALIF.              92325
905189750360     2500    CRESTLINE VILLAGE COUNTY W. DIST                                  CRESTLINE, CALIF.              92325
905190850360      150    ARROW CREST WATER ASSN.         CREST PARK                        BLUE JAY, CALIFORNIA           92317
905194100360    16000    CUCAMONGA COUNTY WATER DIST.    9641 SAN BERNARDINO RD.           CUCAMONGA, CALIF.              91730
905198650360      400    DAGGETT WATER COMPANY                                             DAGGETT, CALIFORNIA            92327
905215450330      150    LAKE TAMARISK C. SER. AREA NO.51P.O. BOX 3'6                      DESERT CENTER, CALIF.          92241
905216010330      200    DOS PALMOS MUTUAL WATER CO.                                       DESERT HOT SPRINGS, CALIF.  92240
905216100330     4583    DESERT HOT SPGS. CWD - ID NO. 1 6547 SECOND STREET                DESERT HOT SPRINGS, CALIF.  92240
905216110330      603    DESERT HOT SPGS.CWD-N.PALM SPGS 6547 SECOND STREET                DESERT HOT SPRINGS, CALIF.  92240
905216750360      075    DESERT VIEW CO. WATER DISTRICT                                    YUCCA VALLEY, CALIFORNIA       92284
905216850360      450    DEVORE MUTUAL WATER CO.                                           DEVORE, CALIF.                 92405
905232650330     3500    EAGLE MOUNTAIN-KAISER MINE      P.O. BOX 138                      EAGLE MOUNTAIN, CALIF.         92241
905234200360      150    S. CAL. WC - E. BARSTOW                                           BARSTOW, CALIF.                92311
 I. D. #     POP.        NAME OF SUPPLY
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LISTING OF WATER SUPPLIES FROM THE "CWSS"

900000000000 SMSA -- SAN BERNARDINO-RIVERSIDE-ONTARIO, CALIFORNIA

I. D. #	POP.	NAME OF SUPPLY			
905234350330	2500	EAST BLYTHE COUNTY WATER DIST.	13068 COTTONWOOD LANE	BLYTHE, CALIFORNIA	92225
905234500330	30000	EASTERN MUNICIPAL WATER DISTRICT	24555 SAN JACINTO	HEMET, CALIFORNIA	92343
905234610360	500	EAST HIGHLANDS DOMESTIC WATER CO		EAST HIGHLANDS, CALIF.	92329
905235500360	28000	E. SAN BERNARDINO CO.WATER DIST.		SAN BERNARDINO, CALIF.	92403
905236210330	3500	BOX SPRINGS MUTUAL WATER CO.	21740 DRACEA	EDGEMONT, CALIF.	92508
905243300360	036	CHAMISAL MUTUAL WATER CO.	P.O. BOX 130	ADELANTO, CALIF.	92301
905246600330	2500	ELSINORE MUNICIPAL WATER SUPPLY	CITY BLDG.	ELSINORE, CALIF.	92330
905246620330	1800	ELSINORE W.D. - LAKELAND		ELSINORE, CALIF.	92330
905246630330	2000	ELSINORE W.D. - COUNTRY CLUB		ELSINORE, CALIF.	92330
905246700330	3450	ELSINORE VALLEY MUN. WATER DIST.	16755 GRAND AVE.	ELSINORE, CALIF.	92330
905254410360	1500	SOUTHWEST W.C. - ETIWANDA DIST.	7110 ETIWANDA AVE.	ETIWANDA, CALIF.	91739
905263400360	1200	FAWNSKIN MUTUAL WATER CO.		FAWNSKIN, CALIF.	92333
905267160330	3500	FERN VALLEY WATER DISTRICT	54968 UPPER PINE COURT	IDYLLWILD, CALIFORNIA	92349
905274830360	125	GRAWFORD CANYON MUT. W.C.		ETIWANDA, CALIF.	91739
905274850360	49000	SAN GABRIEL VALLEY WATER CO.	16803 SPRING AVE.	FONTANA, CALIFORNIA	92335
905275710360	500	BIG PINE TRACT WATER CO.		FOREST FALLS, CALIF.	92339
905275720360	100	FALLSVALE SERVICE COMPANY		FOREST FALLS, CALIF.	92339
905275730360	100	FOREST PARK MUTUAL WATER CO.		FOREST FALLS, CALIF.	92339
905275740360	1200	FOREST HOME CHRIST. CONF. CENTER		FOREST FALLS, CALIF.	92339
905285400360	100	BROOKINGS PIPELINE MUT. WATER CO		FREDALBA, CALIF.	92385
905299800330	3500	GLEN AVON HEIGHTS MUT. WATER CO.		GLEN AVON HEIGHTS, CALIF.	92509
905313850360	300	GREEN VALLEY MUTUAL WATER CO.		GREEN VALLEY LAKE, CALIF.	92341
905331860360	100	HAVASU WATER CO.		HAVASU LAKE, CALIF.	92363
905331870360	600	HAVASU LANDING WATER SUPPLY		HAVASU LAKE, CALIF.	92363
905338400330	9000	HEMET CITY WATER SUPPLY	124 N. CARMALITA ST.	HEMET, CALIF.	92343
905338420330	158	LAKE HEMET MWD-D & S WATER CO.		LAKE HEMET, CALIF.	92343
905342010360	8100	HESPERIA WATER SYSTEM	HESPERIA WATER CO.,6369 SUNSET B	LOS ANGELES, CALIF.	90028
905342020360	130	HESPERIA WATER CO.-TRACT 5694	9174 1 STREET	HESPERIA, CALIF.	90028
905343810360	9530	S. CAL. W.C. - HIGHLAND	7045 PALM	HIGHLAND, CLAIF.	92346
905343820360	400	LANKERSHIM ST. MUT. WATER CO.	7610 LANKERSHIM STREET	HIGHLAND, CALIF.	92346
905346850360	150	HINKLEY VALLEY WATER CO.		HINKLEY, CALIF.	92347
905363610330	1500	IDYLLWILD COUNTY WATER DISTRICT	25945 BANNING	IDYLLWILD, CALIFORNIA	92349
905367800330	12000	INDIO CITY WATER SUPPLY	DRAWER 1788	INDIO, CALIF.	92201
905367810330	360	COE-DEL HEIGHTS MUT. WATER ASSN.		INDIO, CALIF.	92201
905367820330	760	CARVER TRACT MUT. WATER CO.	P.O. BOX 108	INDIO, CALIF.	92201
905367830330	1600	OASIS PALMS WATER CO.(N. INDIO)	44-221C JACKSON ST., PO BOX 867	NORTH INDIO, CALIFORNIA	92201
905367850330	088	WESTWARD HO SERVICE CO.	BOX WWW	INDIO, CALIF.	92201
905381650360	800	RANDSBURG WATER CO.	JOHANNESBURG SUPPLY	RANDSBURG, CALIF.	93554
905383600360	4500	JOSHUA BASIN COUNTY WATER DIST.	P.O.BOX 675,61771-29 PALMS HWY.	JOSHUA TREE, CALIF.	92252
905384090360	150	PANORAMA HEIGHTS WATER COMPANY		JOSHUA TREE, CALIF.	92252
905385700330	11000	JURUPA COMMUNITY SERVICE DIST.	8621 JURUPA RD.	RIVERSIDE, CALIFORNIA	92509
905402900330	075	LA CADENDA MUTUAL WATER CO.	P.O. BOX 1089	RIVERSIDE, CALIF.	92502
905408700360	7560	ARROWHEAD UTILITY CO.		LAKE ARROWHEAD, CALIF.	92352
905408740360	050	LAKE FOREST SERVICE CO.	P.O. BOX 10	LAKE ARROWHEAD, CALIF.	92352
905408750360	420	MEADOWBROOK WATER CO.		LAKE ARROWHEAD, CALIF.	92352
905410500330	14000	LAKE HEMET MUNICIPAL WATER DIST.		HEMET, CALIF.	92343
905419150330	375	LA QUINTA WATER COMPANY	(DEVELOPMENT CORP.) BOX 99	LA QUINTA, CALIF.	92253
905419160330	125	DESERT CLUB MUTUAL WATER CO.		LA QUINTA, CALIF.	92253
905419200330	1728	SANTA CARMELITA MUTUAL WATER CO.		LA QUINTA, CALIF.	92253
905420150330	16000	SOUTH WEST WATER CO.	LA SIERRA WAY	LA SIERRA, CALIF.	92505

I. D. # POP. NAME OF SUPPLY

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                                  LISTING OF WATER SUPPLIES FROM THE "CWSS"
900000000000    SMSA -- SAN BERNARDINO-RIVERSIDE-ONTARIO, CALIFORNIA

 I. D. #      POP.        NAME OF SUPPLY

905429320360    050     HI DESERT WATER CO.                                         LENWOOD, CALIF.            92311
905429330360   2448     S. CAL. W.C. - LENWOOD                                      LENWOOD, CALIFORNIA        92311
905435400360    030     LITTLE MORONGO HEIGHTS WATER ASN                            LITTLE  MORONGO HEIGHTS, CA92256
905444010360    310     COURT STREET WATER COMPANY                                  LOMA LINDA, CALIF.         92354
905444020360    575     INTER CITY MUTUAL WATER CO.     24158 CAROLINE ST.          LOMA LINDA, CALIF.         92354
905444200360    411     LOMA LINDA UNIVERSITY                                       LOMA LINDA, CALIF.         92354
905459400360    030     LU VALLEY MUTUAL WATER CO.                                  LUCERNE VALLEY, CALIF.     92356
905459410360    044     DESERT DAWN MUTUAL WATER CO.                                LUCERNE VALLEY, CALIF.     92356
905459430360    015     CENTER WATER CO.                                            LUCERNE VALLEY, CALIF.     92356
905459450360    250     JUBILEE MUTUAL WATER CO.                                    LUCERNE VALLEY, CALIF.     92356
905459460360    100     LUCERNE VALLEY MUTUAL WATER CO.                             LUCERNE VALLEY, CALIF.     92356
905459470360    075     LUCERNE VISTA WATER CO.                                     LUCERNE VALLEY, CALIF.     92356
905459480360    045     S. CAL W.C.-VICTORVILLE 6.L ZONE                            LUCERNE VALLEY, CALIF.     92356
905459490360    033     STEWART WATER COMPANY                                       LUCERNE VALLEY, CALIF.     92356
905459500360    220     S. CAL W.C.-VICTORVILLE 6.U ZONE                            LUCERNE VALLEY, CALIF.     92356
905461150360    150     LYTLE SPRINGS WATER COMPANY                                 LYTLE CREEK, CALIF.        92358
905474810360    550     MARIANA RANCHOS C.W.D.                                      VICTORVILLE, CALIF.        92392
905484800330    500     MECCA WATER & DEVELOPMENT CO.   67-105 LINCOLN ST.,P.O.DRAWER788MECCA, CALIF.          92254
905487820360   1600     MENTONE DOMESTIC WATER CO.                                  MENTONE, CALIF.            92359
905487300360    200     MILL CREEK MUTUAL SERVICE CO.   ROUTE 1, BOX 278            MENTONE, CALIF.            92359
905499210330   4500     MIRA LOMA WATER CO. (MIRA LOMA) BOX 54228                   LOS ANGELES, CALIF.        90054
905499250330   5500     SANTA ANA RIVER WATER CO.       P.O. BOX 61                 MIRA LOMA, CALIF.          91752
905512800360  29000     MONTE VISTA COUNTY WATER DIST.  10575 CENTRAL AVE.          MONTCLAIR, CALIF.          91763
905516650360    200     HACIENDA WATER ASSOCIATION INC.                             MORONGO VALLEY, CALIF.     92256
905516910360   1400     S. CAL. W.C. - MORONGO VALLEY   BOX 572 (DEL-SUR)           MORONGO VALLEY, CALIF.     92256
905516920360   1700     S. CAL. W.C. - DEL NORTE                                    MORONGO VALLEY, CALIF.     92256
905521100360    350     SAN ANTONIO CANYON MUT. SERV. CO                            MT. BALDY, CALIF.          91759
905521150360    175     SNOWCREST HGTS.DEVELOPMENT ASSN.                            MOUNT BALDY, CALIF.        91759
905521200360    250     MT. BALDY IMP. & WATER ASSN.                                MT BALDY, CALIFORNIA       91759
905527450330    325     MURRIETA MUTUAL WATER CO.                                   MURRIETA, CALIF.           92362
905527800360   7500     MUSCOY MUTUAL WATER CO. NO.1    2167 DARBY STREET           SAN BERNARDINO, CALIF.     92405
905527810360   3500     SAN BERN WATER UTIL. CORP.      3170 STATE ST.              MUSCOY, CALIF.             92404
905527820360   2890     S. CAL. W.C. - MUSCOY           7045 PLAM ST.               HIGHLANDS, CALIF.          92346
905528400330    400     PYONA DUNES MUTUAL WATER CO.    (BURMUDA DUNES SUPPLY)      LA QUINTA AIRPORT, CALIF.  92253
905531600360   4900     NEEDLES CITY WATER SUPPLY       1011 FRONT ST.              NEEDLES, CALIF.            92363
905534650360    150     SANTA FE RR-LUDLOW & AMBOY W.SUPWATER SUPPLY                NEWBERRY, CALIF.           92365
905542450360    200     MOLYBDENUM CORP. OF AMERICA     (MOUNTAIN PASS OPR.)        NIPTON, CALIF.             92366
905543000330  11800     NORCO COMM. SERVICE DISTRICT    P.O. BOX 158                NORCO, CALIF.              91760
905549000330   1000     NUEVO WATER COMPANY             P.O. BOX 166                NUEVO, CALIFORNIA          92367
905565000360  63000     ONTARIO MUNICIPAL WATER SUP     225 S. EUCLID AVE.          ONTARIO, CALIF.            91761
905579020330    250     DEEP CANYON WATER CO.           BOX 93                      PALM DESERT, CALIF.        92260
905579050330    425     PANORAMA MUTUAL WATER CO.                                   PALM DESERT, CALIF.        92260
905579200330   2500     PALM DESERT COMMUNITY SER. DIST.44500 PORTO.A               PALM DESERT, CALIF.        92260
905579620330  23400     DESERT WATER AGENCY                                         PALM SPRINGS, CALIF.       92262
905579680330    460     THUNDERBIRD WATER CO.                                       PALM SPRINGS, CALIF.       92262
905584410360    480     BLACK MEADOW LANDING WATER SUP. P.O. BOX 98                 PARKER DAM, CALIF.         92267
905584420360    300     ECHO LODGE WATER SUPPLY         PO BOX B                    PARKER DAM, CALIF.         92267
905584430360    100     FISHING VILLAGE WATER SUPPLY    P.O. BOX 14                 PARKER DAM, CALIF.         92267
905594600330   3300     PERRIS MUNICIPAL WATER SUPPLY   101 "D" STREET              PERRIS, CALIF.             92370
905597650360    340     SHEEP CREEK WATER CO.                                       PHELAN, CALIF.             92371
 I. D. #      POP.        NAME OF SUPPLY
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                                         LISTING OF WATER SUPPLIES FROM THE "CWSS"
900000000000     SMSA -- SAN BERNARDINO-RIVERSIDE-ONTARIO, CALIFORNIA

 I. D. #      POP.        NAME OF SUPPLY

905602210330      225     PINE COVE COUNTY WATER DISTRICT 24917 MARION RIDGE, PINE COVE   IDYLLWILD. CALIF.             92349
905605600360      300     SMITHSON SPRINGS WATER CO.      P.O. BOX 185                    PINON HILLS. CALIF.           92372
905606600360      030     PIONEERTOWN WATER SUPPLY                                        PIONEERTOWN. CALIF.           92268
905631350330      860     EASTERN M.W.D. - RANCHO CALIF.  P.O. BOX 174                    TEMECULA. CALIF.              92390
905631800330     1900     RANCHO MIRAGE WATER COMPANY     P.O. BOX 186                    RANCHO MIRAGE. CALIF.         92270
905636000360    40000     REDLANDS CITY WATER SUPPLY      CITY HALL                       REDLANDS. CALIF.              92373
905636020330      040     EL CASO RESORT WATER SUPPLY     RT. 2. BOX 711                  REDLANDS. CALIF.              92373
905636050330      040     FISHERMANS RETREAT WATER SUPPLY RT. 2. BOX 720                  REDLANDS. CALIF.              92373
905642600360    19500     RIALTO MUNICIPAL WATER DEPT.    150 SOUTH PALM ST.              RIALTO. CALIF.                92376
905647760360      655     S. CAL. W.C. - RIM FOREST                                       RIM FOREST. CALIF.            92378
905647770360      300     BURNT MILL CNYN. MUT.W & DEV ASN                                RIM FOREST. CALIFORNIA        92378
905647780360      030     BURNT MILL HEIGHTS WATER ASSN.                                  RIM FOREST. CALIF.            92378
905655200330   120000     RIVERSIDE CITY WATER SUPPLY     P.O. BOX 826                    RIVERSIDE. CALIF.             92502
905655230330      600     FORT FREMONT MUTUAL WATER CO.   3884 MENNES AVE.                RIVERSIDE. CALIF.             92509
905655240330      234     INTER COUNTY WATER CO.          3975 7TH ST.                    RIVERSIDE. CALIF.             92501
905655250330      350     CRESTMORE HEIGHTS MUT. WATER CO.3975 W. 7TH STREET              RIVERSIDE. CALIF.             92502
905655260330      450     FELSPAR GARDENS MUT. WATER CO.  4329 GLEN                       RIVERSIDE. CALIF.             92509
9°5655270330      085     GALENA MUTUAL WATER CO.         8184 GALENA ST.                 RIVER SIDE. CALIF.            92509
905655280330      055     WESTERN MWD - RAINBOW CANYON    6377 RIVERSIDE AVE              RIVERSIDE. CALIF.             92506
905664510330      210     RIO RANCHOS MUTUAL WATER CO.    3940 WALLACE                    RUBIDOUX. CALIF.              92509
905664520330      068     PEARSON MUTUAL WATER CO.                                        RIVERSIDE. CALIF.             92509
905664540330    12000     RUBIDOUX COMMUNITY SERVICES DIST                                RUBIDOUX. CALIF.              92509
905665500360     3750     RUNNING SPRINGS CO. WATER DIST. P.O. BOX 145                    RUNNING SPRINGS. CALIF.       92382
905674400360   100500     SAN BERNARDINO CITY WATER SUPPLY195 D STREET                    SAN BERNARDINO. CALIF.        92401
905674410360      170     DILLSON MUTUAL WATER CO.        284 E. MARSHALL BLVD.           SAN BERNARDINO. CALIF.        92404
905674470360      100     HOLDEN WATER CO.                764FOISY ST.                    SAN BERNARDINO. CALIF.        92408
905674480360      450     VAN LOON MUTUAL WATER CO.                                       SAN BERNARDINO. CALIF.        92400
905674490360      400     EASTWOOD FARMS COMM. WATER USERS25019 E. FIFTH ST.              SAN BERNARDINO. CALIF.        92410
905674510360      750     ARROYO VERDE MUTUAL WATER CO.   7507 BONNIE ST.                 SAN BERNARDINO. CALIF         92405
905674520360     1485     BASELINE GARDENS MUT. WATER CO. 24744 E. BASELINE ST.           SAN BERNARDINO. CALIF.        92403
905674530360      100     CAMP WATERMAN MUTUAL WATER CO.                                  SAN BERNARDINO. CALIF.        92403
905674540360      435     CARDIFF FARMS MUTUAL WATER CO.  24775 CARDIFF                   SAN BERNARDINO. CALIF.        92408
905674550360      350     GIFFORD PARK MUTUAL WATER CO.   8944 GIFFORD ST.                SAN BERNADINO. CALIF.         92408
905674560360      036     MONTECITO MUTUAL WATER CO.      P.O. BOX 327                    SAN BERNARDINO. CALIF.        92402
905674570360      608     SUNNYSIDE MUTUAL WATER CO.                                      SAN BERNARDINO. CALIF.        92402
905674580360      173     VALLEY FARMS MUTUAL WATER CO.   9367 WASHINGTON ST.             SAN BERNARDINO. CALIF.        92408
905674590360      900     VICTORIA FARMS MUTUAL WATER CO.                                 SAN BERNARDINO. CALIF.        92400
905674620360      350     SAN BERN.COUNTY W.WKS.DIST. NO.8                                SLEPPY HOLLOW. CALIF.         91710
905674630360     6000     SAN BERN. C. SERVICE AREA NO. 2 1126 ANDERSON ST.               LOMA LINDA. CALIF.            92354
905674640360      502     SAN BERN. C. SERVICE AREA NO. 42P.O. BOX L                      ORO GRANDE. CALIF.            92368
905674810360    13000     SAN BERN. VALLEY M.W.D.         35192 CEDAR AVE                 YUCAIPA. CALIF.               92399
905682200330     4000     SAN JACINTO CITY WATER SUPPLY   P.O. BOX 488                    SAN JACINTO. CALIF.           92383
905682220330     1200     FRUITVALE MUTUAL WATER CO.      BOX 565                         SAN JACINTO. CALIF.           92383
905726650360     1700     ARROWHEAD VILLAS MUT. SERVICE COP.O. BOX 77                     SKYFOREST. CALIF.             92385
9"5726680360      400     SKYFOREST MUTUAL WATER COMPANY                                  SKYFOREST. CALIF.             92385
905741550360     2000     S. SAN BERN. C.W.D.-SOUTH SYSTEM822 TIPPECANOE AVE.             SAN BERNARDINO. CALIF.        92408
905741560360     1200     S. SAN BERN. C.W.D.-NORTH SYSTEM882 TIPPECANOE                  SAN BERNARDINO. CALIF.        92408
905760400360      200     SUNFAIR WATER CO.                                               SUNFAIR. CALIF.               92252
905760810330     5000     EDGEMONT GARDENS MUTUAL WATER CO                                SUNNYMEAD. CALIF              92388
905760820330      832     SUNNYMEAD MUT. WATER CO.                                        SUNNYMEAD. CALIF.             92388
 I. D. #      POP.        NAME OF SUPPLY
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LISTING OF WATER SUPPLIES FROM THE "CWSS"

900000000000 SMSA -- SAN BERNARDINO-RIVERSIDE-ONTARIO, CALIFORNIA

I. D. #	POP.	NAME OF SUPPLY			
905779410330	050	BECKMAN ESTATES MUT. WATER ASSN.	P.O. BOX 255	INDIO. CALIF.	92201
905779450330	075	FULLER MUTUAL WATER CO.	83355 AVE. 55	THERMAL. CALIF.	92274
905779900330	150	THOMAS MOUNTAIN MUT. WATER CO.		MOUNTAIN CENTER. CALIF.	92361
905782450360	240	THUNDERBIRD COUNTY WATER DIST.		APPLE VALLEY. CALIF.	92307
905792610360	5020	SEARLES DOMESTIC WATER CO.		TRONA. CALIFORNIA	93562
905799810360	7900	TWENTYNINE PALMS CO. WATER DEPT.	6544 ADOBE ROAD	TWENTYNINE PALMS, CALIF.	92277
905801010360	500	ALPINE WATER USERS ASSN.	P.O. BOX 122	TWIN PEAKS, CALIF.	92391
905801200360	750	STRAWBERRY FLATS WATER ASSN.	P.O. BOX 31	TWIN PEAKS, CALIF.	92391
905801250360	400	STRAWBERRY LODGE MUT. WATER CO.	BOX 7	TWIN PEAKS, CALIF.	92391
905803400360	31500	UPLAND CITY WATER SUPPLY	CITY HALL	UPLAND, CALIF.	91786
905803420360	612	TIOGA MUTUAL WATER CO.		UPLAND, CALIF.	91786
905803430360	2400	SAN ANTONIO WATER CO.	139 N. EUCLID AVE.	UPLAND, CALIF.	91786
905808850330	070	VALLEY VIEW MUTUAL WATER ASSN.	SECTION 17, 61511 OLD ROUTE 10	RIVERSIDE, CALIF.	92502
905814860360	12000	VICTORVILLE CO. WATER DISTRICT	15075 SEVENTH STREET	VICTORVILLE. CALIF.	92392
905823800330	380	WALLER TRACT WATER SYSTEM	43-778 E. CIRCLE DR.	NORTH INDIO. CALIF.	92201
905834650330	3700	WESTERN MUNICIPAL WATER DISTRICT		RIVERSIDE. CALIF.	92506
905837300330	075	WEST PALM SPRINGS WATER CO.		WEST PALM SPRINGS, CALIF.	92282
905838330330	380	WEST RIVERSIDE MUTUAL WATER CO.	2540 HALL ST.	WEST RIVERSIDE, CALIF.	92509
905839000360	10850	WEST SAN BERNARDINO C.W.D.		RIALTO, CALIF.	92376
905861050360	1200	CALIFORNIA CITIES WATER CO.		WRIGHTWOOD, CALIF.	92397
905862830360	040	UNION PACIFIC R.R. WATER SUPPLY		YERMO. CALIF.	92398
905862850360	100	HEL-BRO WATER CO.	225 N. SECOND ST.	YERMO. CALIF.	92398
905862860360	1200	YERMO MUTUAL WATER CO.	225 N. SECOND ST.	YERMO. CALIF.	92398
905867610360	9000	WESTERN HEIGHTS WATER CO.		YUCAIPA. CALIF.	92399
905867650360	085	OAK GLEN DOMESTIC WATER CO.	PILGRIM CAMP	YUCAIPA, CALIFORNIA	92399
905867660360	070	YUCAIPA TRIPLE FALLS MUTUAL	WATER COMPANY	YUCAIPA, CALIF.	92399
905868350360	4700	YUCCA WATER CO. LTD.		YUCCA VALLEY, CALIF.	92284
905868400360	5000	YUCCA VALLEY COUNTY WATER DIST.	6955 OLD WOMAN SPRINGS RD.	YUCCA VALLEY, CALIF.	92284

FOR FURTHER INFORMATION CONTACT THE REGIONAL REPRESENTATIVE, BUREAU OF WATER HYGIENE, DHEW REGION IX,
50 FULTON STREET, SAN FRANCISCO, CALIFORNIA 94102. TEL: 415-556-5677.

GLOSSARY OF TERMS

CONSUMER -- One person using the water for domestic and culinary purposes.

CROSS CONNECTION -- Any physical connection or arrangement between two otherwise separate piping systems, one of which contains potable water and the other either water of unknown or questionable safety, or steam, gas, or chemical, whereby there may be a flow from one system to the other, the direction of flow depending on the pressure differential between the two systems.

FECAL COLIFORM BACTERIA -- That portion of the total coliform population which are capable of lactose fermentation at an elevated temperature of 44.5°C. Unlike some strains of the non-fecal members of the total coliform group, fecal coliforms have a specific high order of positive correlation with warm-blooded animal pollution, survive for a shorter time in water and soil, and more closely correlate with survival patterns of enteric pathogenic bacteria.

INTER-CONNECTION -- A connection between the water supply and one or more additional sources of water not under the jurisdiction or control of the water supply operator.

MANDATORY LIMIT-- The upper limit of density of coliform bacteria as described in Section 3.23, as modified below, of the concentrations of certain ions as described in Section 5.22 and 5.23 and of radioactivity as described in Section 6.22, Public Health Service Drinking Water Standards, 1962 (PHS Publication No. 956). For these samples collected for this study, the bacterial limit was exceeded if the arithmetic average was more than 1 coliform per 100 ml, or if 2 or more samples (5% or more if 20 or more were examined) contained more than 4 coliforms per 100 ml.

OPERATOR -- The operator at the treatment plant responsible for the day-to-day operation of the treatment facilities. Where there is no treatment, the person responsible for the operation of the system.

PLATE COUNT -- A measure of the general bacterial population present in the water sample as described in Standard Methods for the Examination of Water and Wastewater, 12th Ed. These bacteria will produce colonies on plate count agar in 48 hours when incubated at 35°C (95°F).

RECOMMENDED LIMIT -- The upper limit of concentration of turbidity, color, chemicals and radioactivity as described in Sections 4.2; 5.21; 6.21 and Section C, page 21, PHS Drinking Water Standards, 1962 (PHS Publication No. 956).

SERVICE CONNECTION -- A physical connection to a water main for the purpose of conveying water to a building or onto a premise for use.

TOTAL VERIFIED COLIFORMS -- Microorganisms that include a heterogeneous grouping of bacteria which are identified by bacteriological procedures to produce aldehydes on Endo media at 35°C and were shown to ferment lactose with gas production within 48 hours at 35°C in either aerobic or facultative anaerobic environments. Because these bacteria are eliminated in large numbers in fecal wastes, they have been the traditional bacteriological tool used to measure the occurrence and intensity of contamination in water supplies.